

BS-120 Chemistry Analyzer

Operator's Manual



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**WARNING:**

It is important for the hospital or organization that employs this equipment to carry out a reasonable service/maintenance plan. Neglect of this may result in machine breakdown or personal injury.

**NOTE:**

This equipment must be operated by skilled/trained clinical professionals.

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Foreword

Before using the Chemistry Analyzer, please read this operation manual thoroughly and understand it for best performance.

Please keep this manual properly for convenient use.

Who Should Read This Manual

This manual is geared for clinical professionals to:

- Perform daily operating tasks;
- Maintain and troubleshoot the system;
- Learn about the hardware and software.



WARNING

The system is to be operated only by clinical professionals, doctors or laboratory experimenters trained by our company or our authorized distributors.




What Can You Find in This Manual


This manual covers principles, basic operating instructions, maintenance and troubleshooting guidelines of the system. Please operate and troubleshoot the system strictly as instructed by this manual.

Conventions Used in This Manual

Safety Symbols















This chart explains the symbols used in this manual.

When you see...	Then...
 WARNING	Read the statement following the symbol. The statement is alerting you to an operating hazard that can cause personal injury.
 BIOHAZARD	Read the statement following the symbol. The statement is alerting you to a potentially biohazardous condition.
 CAUTION	Read the statement following the symbol. The statement is alerting you to a possibility of system damage or unreliable results.

When you see...	Then...
 NOTE	Read the statement following the symbol. The statement is alerting you to information that requires your attention.

Labels Used On the System

The labels attached to the panels of the system use symbols to clarify the meaning of the text. If any of the labels becomes vague or peels off, contact our customer service department or your local distributor for replacement. The chart below explains the symbols on the labels.

	Serial Number
	Date of Manufacture
	Manufacturer
	CE marking. The device is fully in conformity with the Council Directive Concerning In Vitro Diagnostic Medical Devices 98/79/EC.
	Authorized Representative in the European Community
	The following definition of the WEEE label applies to EU member states only: The use of this symbol indicates that this product should not be treated as household waste. By ensuring that this product is disposed of correctly, you will help prevent bringing potential negative consequences to the environment and human health. For more detailed information with regard to returning and recycling this product, please consult the distributor from whom you purchased the product.
	In Vitro diagnostic equipment
	Biohazard warning: Risk of potentially biohazardous infection
	Warning: Risk of personal injury or equipment damage
	Warning: Risk of burn
	ON (Main Power)
	OFF (Main Power)
	ON (Power)
	OFF (Power)



Serial communication port



Protective ground terminal

Graphics

All graphics, including screens and printout, are for illustration purposes only and must not be used for any other purpose.

Special Terminology

In this operation manual, “Sample Probe” refers to the same object as the “Reagent Probe” does. When introducing software operations, we call the probe “Sample Probe” for sample aspiration/dispensing and “Reagent Probe” for reagent aspiration/dispensing.

In this operation manual, “Sample/Reagent Disk” refers to the same object as the “Sample Disk” and “Reagent Disk” does. When introducing software operations, we call the disk “Sample Disk” for sample aspiration/dispensing and “Reagent Disk” for reagent aspiration/dispensing.

Safety Precautions

Observe the following safety precautions when using the Chemistry Analyzer. Ignoring any of these safety precautions may lead to personal injury or equipment damage.



WARNING

If the system is used in a manner not specified by our company, the protection provided by the system may be impaired.

Preventing Electric Shock

Please observe the following instructions to prevent electric shock.



WARNING

When the Main Power is on, you must not open the rear cover or side cover.

Spillage of reagent or sample on the analyzer may cause equipment failure and even electric shock. Do not place sample and reagent on the analyzer. In case of spillage, switch off the power immediately, remove the spillage and contact our customer service department or your local distributor.

Preventing Personal Injury Caused by Moving Parts

Please observe the following instructions to prevent personal injury caused by moving parts.



WARNING

Do not touch such moving parts as sample probe and mixer, when the system is in operation.

Do not put your finger or hand into any open part when the system is in operation.

Preventing Personal Injury Caused by Photometer Lamp

Please observe the following instructions to prevent personal injury caused by photometer lamp.



WARNING

Light sent by the photometer lamp may hurt your eyes. Do not stare into the lamp when the system is in operation.

If you want to replace the photometer lamp, first switch off the Main Power and then wait at least 15 minutes for the lamp to cool down before touching it. Do not touch the lamp before it cools down, or you may get burned.

Preventing Infection

Please observe the following instructions to protect against the biohazardous infection.



BIOHAZARD

Inappropriately handling samples, controls and calibrators may lead to biohazardous infection. Do not touch the sample, mixture or waste with your hands. Wear gloves and lab coat and, if necessary, goggles.

In case your skin contacts the sample, control or calibrator, follow standard laboratory safety procedure and consult a doctor.

Handling Reagents and Wash Solution

Please observe the following instructions to protect against the chemical hazard.



WARNING

Reagents and wash solution may hurt human skins. Exercise caution when using the reagents and wash solution. In case your skin or clothes contact them, wash them off with soap and clean water. In case the reagents or wash solution spill into your eyes, rinse them with much water and consult an oculist.

Treating Waste Liquids

Please observe the following instructions to prevent environmental pollution and personal injury caused by waste.



BIOHAZARD

Some substances in reagent, control, wash solution and waste are subject to regulations of contamination and disposal. Dispose of them in accordance with your local or national guidelines for biohazard waste disposal and consult the manufacturer or distributor of the reagents for details.

Wear gloves and lab coat and, if necessary, goggles.

Treating Waste Analyzer

Please observe the following instructions to dispose of the waste analyzer.



WARNING

Materials of the analyzer are subject to contamination regulations. Dispose of the waste analyzer in accordance with your local or national guidelines for waste disposal.

Preventing Fire or Explosion

Please observe the following instructions to prevent fire and explosion.



WARNING

Ethanol is flammable substance. Please exercise caution while using the ethanol.

Precautions on Use

To use the Chemistry Analyzer safely and efficiently, please pay much attention to the following operation notes.

Intended Use



WARNING

The system is an automated chemistry analyzer for in vitro diagnostic use in clinical laboratories. The analyzer is designed for the in vitro quantitative determination of clinical chemistries in serum, plasma, urine or cerebral spinal fluid samples.

To draw a clinical conclusion, please also refer to the patient's clinical symptoms and other test results.

Operator



WARNING

The system is to be operated only by clinical professionals, doctors or laboratory experimenters trained by our company or our authorized distributors.

Environment



CAUTION

The electromagnetic environment should be evaluated prior to operation of the device.

Please install and operate the system in an environment specified by this manual. Installing and operating the system in other environment may lead to unreliable results and even equipment damage.

To relocate the system, please contact our customer service department or your local distributor.

Preventing Interference by Electromagnetic Noise



CAUTION

Electromagnetic noise may interfere with operations of the system. Do not install devices generating excessive electromagnetic noise around the system. Do not use such devices as mobile phones or radio transmitters in the room housing the system. Do not use other CRT displays around the system.

Do not use other medical instruments around the system that may generate electromagnetic noise to interfere with their operations.

Do not use this device in close proximity to sources of strong electromagnetic radiation (e.g. mobile phones or radio transmitters), as these may interfere with the proper operation.

The electromagnetic environment should be evaluated prior to operation of the device.

Operating the System



CAUTION

Operate the system strictly as instructed by this manual. Inappropriate use of the system may lead to unreliable test results or even equipment damage or personal injury.

Before using the system for the first time, run the calibration program and QC program to make sure the system is in normal status.

Be sure to run the QC program every time you use the system, otherwise the result may be unreliable.

Do not open the covers of the sample/reagent disk cover when the system is in operation.

The RS-232 port on the analyzing unit is to be used for connection with the operation unit only. Do not use it for other connections. Only use the supplied cable for the connection.

The operation unit is a personal computer with the operating software installed. Installing other software or hardware on this computer may interfere with the system operation. Do not run other software when the system is working.

Computer virus may destroy the operating software or test data. Do not use this computer for other purposes or connect it to the Internet.

Do not touch the display, mouse or keyboard with wet hands or hands with chemicals.

Do not place the Main Power to ON again within 10 seconds since placing it to OFF; otherwise the system may enter protection status. If it does so, switch off the Main Power and switch it on again.

Discard the cuvette after use. Do not use it again.

Maintaining the System



CAUTION

Maintain the system strictly as instructed by this manual. Inappropriate maintenance may lead to unreliable results, or even equipment damage and personal injury.

Dust may accumulate on the system surface when the system is exposed to the outside for a long time. To wipe off dust from the system surface, use a soft, clean and wet (not too wet) cloth, soaked with mild soap solution if necessary, to clean the surface. Do not use such organic solvents as ethanol for cleaning. After cleaning, wipe the surface with dry cloth.

Switch off all the powers and unplug the power cord before cleaning. Take necessary measures to prevent water ingress into the system, otherwise it may lead to equipment damage or personal injury.

Replacement of such major parts as lamp, photometer, sample probe, mixer and syringe plunger assembly must be followed by a calibration.

Replacement of lamp must be done after the power has been placed to off for at least 15 minutes.

Samples



CAUTION

Use samples that are completely free of insoluble substances like fibrin, or suspended matter; otherwise the probe may be blocked.

Medicines, anticoagulants or preservative in the samples may lead to unreliable results.

Hemolysis, icterus or lipemia in the samples may lead to unreliable test results, so a sample blank is recommended.

Store the samples properly. Improper storage may change the compositions of the samples and lead to unreliable results.

Sample volatilization may lead to unreliable results. Do not leave the sample open for a long period.

Some samples may not be analyzed on the system based on parameters the reagents claim capable of testing. Consult the reagent manufacturer or distributor for details.

Certain samples need to be processed before being analyzed by the system. Consult the reagent manufacturer or distributor for details.

The system has specific requirements on the sample volume. Refer to this manual for details.

Load the sample to correct position on the sample disk before the analysis begins; otherwise you will not obtain correct results.

Reagents, Calibrators and Controls



CAUTION

Use appropriate reagents, calibrators and controls on the system.

Select appropriate reagents according to performance characteristic of the system. Consult the reagent suppliers, our company or our authorized distributor for details, if you are not sure about your reagent choice.

Store and use reagents, calibrators and controls strictly as instructed by the suppliers. Otherwise, you may not obtain reliable results or best performance of the system.

Improper storage of reagents, calibrators and controls may lead to unreliable results and bad performance of the system even in validity period.

Perform a calibration and quality control after changing reagents. Otherwise, you may not obtain reliable results.

Carryover among reagents may lead to unreliable test results. Consult the reagent manufacturer or distributor for details.

Setting up the System



CAUTION

To define such parameters as sample volume, reagent volume and wavelength, follow the instructions in this manual and the package insert of the reagents.

Backing up Data



NOTE

The system can automatically store data to the built-in hard disk of the PC. However, data loss is still possible due to mis-deletion or physical damage of the hard disk. We recommend you to regularly back up the data to portable storage device.

Computer and Printer



NOTE

Refer to the operation manuals of computer and printer for details.

External Equipment



WARNING

External equipment connected to the analogue and digital interfaces must be complied with the relevant Safety and EMC standards (e.g., IEC 60950 Safety of Information Technology Equipment Standard and CISPR 22 EMC of Information Technology Equipment Standard (CLASS B)). Any person, who connects additional equipment to the signal input or output ports and configures an IVD system, is responsible for ensuring that the system work normally and complies with the safety and EMC requirements. If you have any problem, consult the technical services department of your local representative.

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1 *System Description*

This chapter describes the structure and screen operations of the Chemistry Analyzer.

The system is an automated chemistry analyzer for in vitro diagnostic use in clinical laboratories. The analyzer is designed for the in vitro quantitative determination of clinical chemistries in serum, plasma, urine or cerebral spinal fluid samples.



NOTE

Some samples may not be analyzed on the system based on parameters the reagents claim capable of testing. Consult the reagent manufacturer or distributor for details.

1.1 Hardware Introduction

The Chemistry Analyzer consists of the analyzing unit (analyzer), operation unit (PC), output unit (printer), accessories and consumables.

1.1.1 Analyzing Unit

The analyzing unit consists of the following major parts:

- Sample/reagent
- Disk Dispenser
- Mixer Assembly
- Reaction Disk
- Photometric System
- ISE Unit(optional)

Figure 1-1 Analyzing Unit

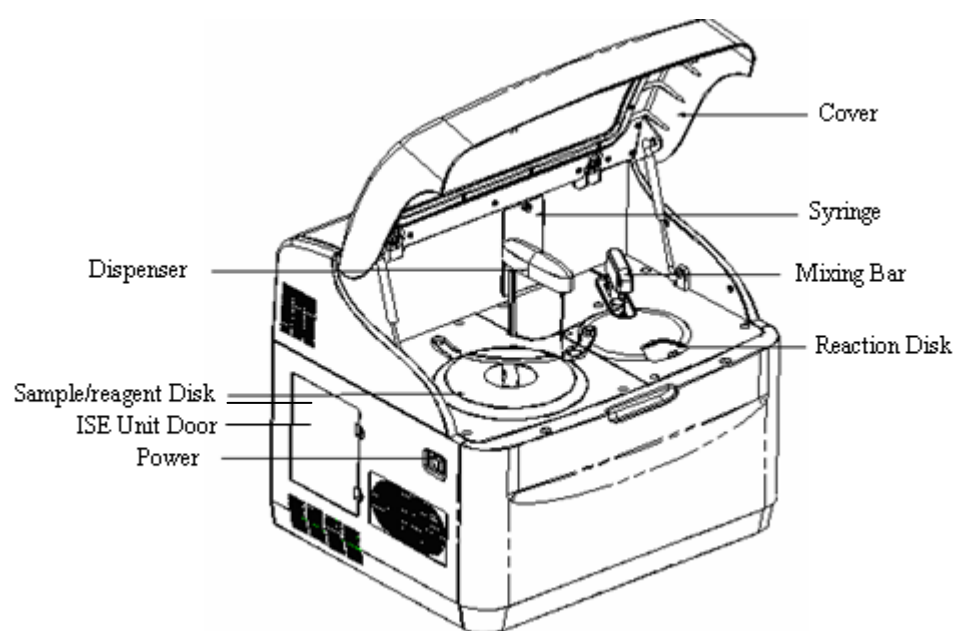
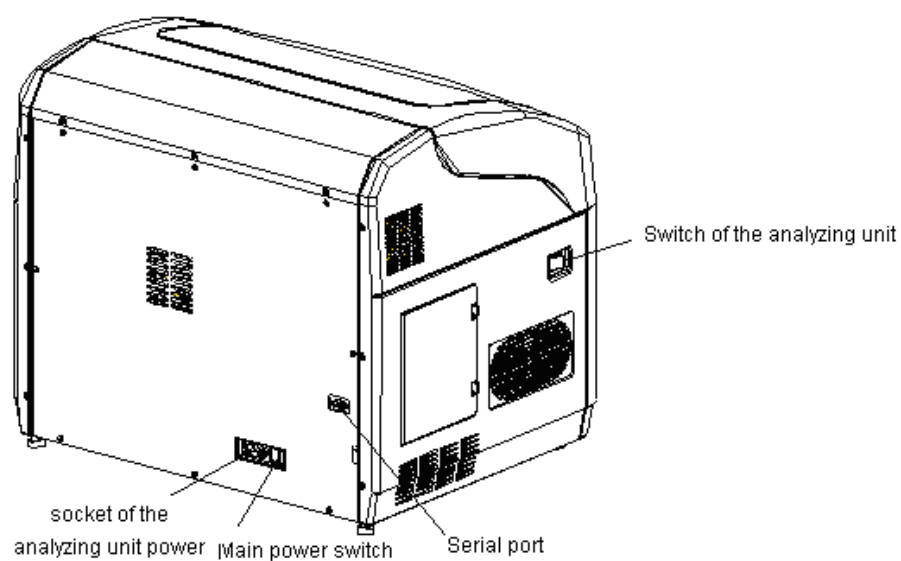


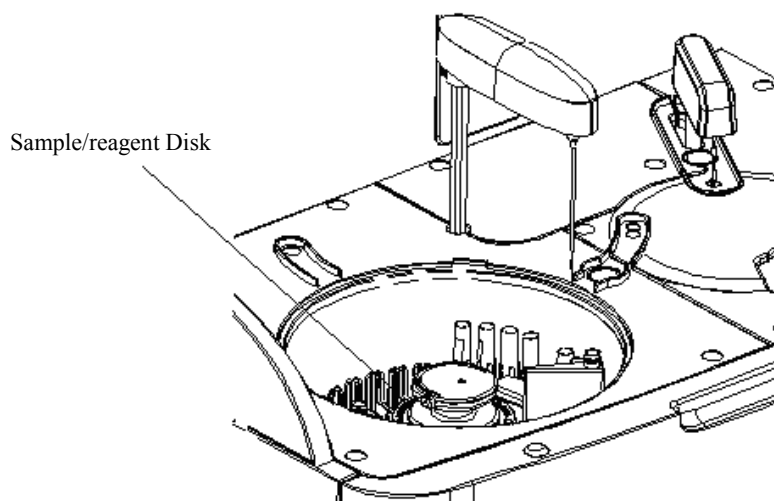
Figure 1-2 Rear View and Right View



1.1.1.1 Sample/Reagent Disk

The sample/reagent disk holds sample tubes and reagent bottles.

Figure 1-3 Sample/Reagent Disk



Samples and reagents share one disk, which provides 8 positions for samples and 28 positions for reagents. Moreover, No.35 is used to accommodate wash solution and No.36 to accommodate distilled water. If the system is equipped with an ISE module, No.33 is used to hold ISE cleaning solution and No.34 to hold urine diluent.



NOTE

We recommend you to use the following wash solution:

Acid: 0.1mol/l hydrochloric acid; Alkaline: javel water with 0.5% active chlorine.

You should dilute the sodium hypochlorite solution at appropriate ratio according to the available chlorine contained in it.

The sample disk can hold the following sample tubes

- Microtube: Φ 10×37mm, Φ 12×37mm;
- Blood collecting tube: Φ 12×68.5mm, Φ 12×99mm, Φ 12.7×75mm, Φ 12.7×100mm, Φ 13×75mm, Φ 13×100mm;
- Plastic tube: Φ 12×68.5mm, Φ 12×99mm, Φ 12.7×75mm, Φ 12.7×100mm, Φ 13×75mm, Φ 13×100mm.

The reagent disk can only hold our bottles, which are available in two types, 40ml and 20ml.

The sample/reagent disk is located in a compartment, which has a refrigerator function to keep the temperature at 4-15°C.



CAUTION

Make sure the disk cover is closed; otherwise it may degrade the refrigeration and damage the probe.

Before running the analyzing unit, make sure that the disk cover is closed properly. Otherwise the probe may be damaged.

Do not use sample tubes and reagent bottles other than the specified ones.



NOTE

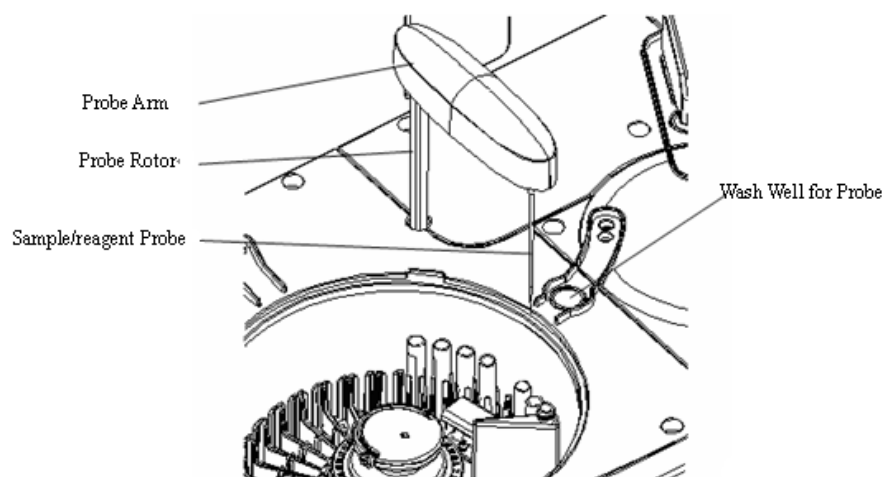
The refrigerator will be put into service once the Main Power is turned on.

1.1.1.2 Dispenser

The dispenser, composed of a probe, probe arm and rotor, is used to aspirate certain amount of sample or reagent from the designated sample tube or reagent bottle and then dispense it into the specified reaction cuvette on the reaction disk.

After dispensing the sample or the reagent, the probe moves to its wash well for cleaning.

Figure 1-4 Dispenser



- Sample volume: 3 μ l-45 μ l in the increment of 0.5 μ l.
- Reagent volume: 30 μ l-450 μ l in the increment of 1 μ l.

The dispenser is capable of preheating the reagents, detecting the sample/reagent level, tracking sample/reagent level and protecting the probe against collision in the vertical direction.



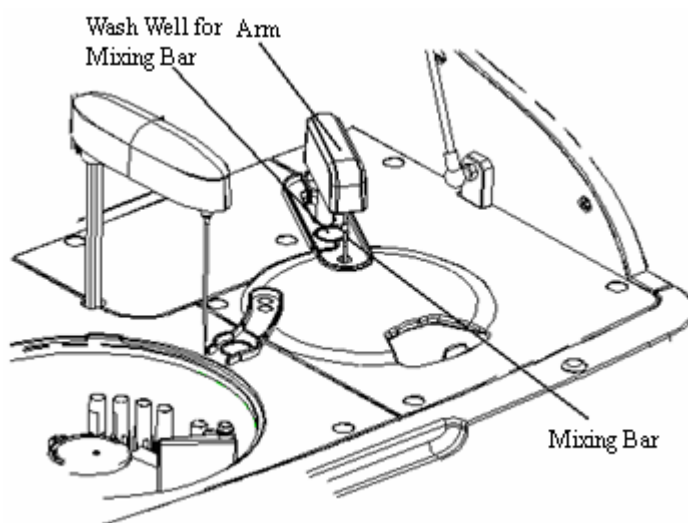
WARNING

When the analyzing unit is in operation, do not place any part of your body or any obstacle in the route the arm moves. Otherwise, it may lead to personnel injury or equipment damage.

1.1.1.3 Mixer Assembly

The mixer assembly, composed of a mixing bar, arm and rotor, is used to stir the reaction liquid(samples and reagents) in reaction cuvette, so that the samples can react thoroughly with the reagents.

Figure 1-5 Mixer Assembly



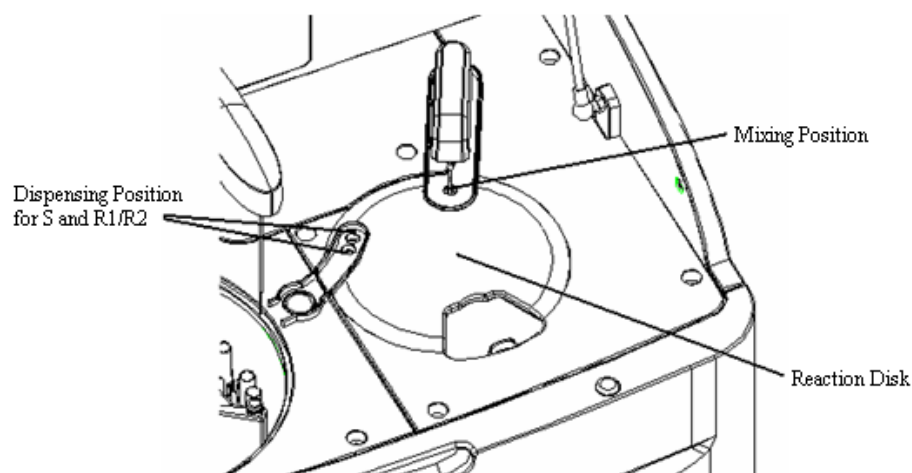
- For single-reagent tests, the mixing bar starts to work after sample is dispensed into the cuvette.
- For double-reagent tests, the mixing bar starts to work after the sample or the second reagent(R2) is dispensed into the cuvette.

When stirring is finished, the mixing bar rotates automatically to its wash well for cleaning.

1.1.1.4 Reaction Disk

The reaction disk holds the cuvettes, in which the sample reacts with the reagent(s) and colorimetric measurement is performed.

Figure 1-6 Reaction Disk



The reaction disk can hold 8 cuvette segments (40 cuvettes in total).

During the analyzing process, the reaction disk rotates to the dispensing position and mixing position to dispense sample or reagent and to stir reaction liquid. When the specified cuvette is carried passing through the optical axis, the reaction liquid inside the cuvette is measured and also corresponding colorimetric readings are taken.

The reaction cuvettes applied have the following specifications: Disposable; 5mm×6mm×30mm (optical path of 5mm); 900μl (capable of holding 180-500μl reaction mixture). The reaction cuvettes should be replaced manually.

The reaction disk is placed in the temperature-controlled chamber, which keeps a constant temperature at 37°C.



BIOHAZARD

Be sure to dispose of the used cuvettes in compliance with the local regulations.



CAUTION

The reaction cuvettes are for single use only. If they are reused, the system performance may be degraded.

Do not use reaction cuvettes other than the specified ones; otherwise, system performance will not be achieved as promised.

1.1.1.5 Photoelectric System

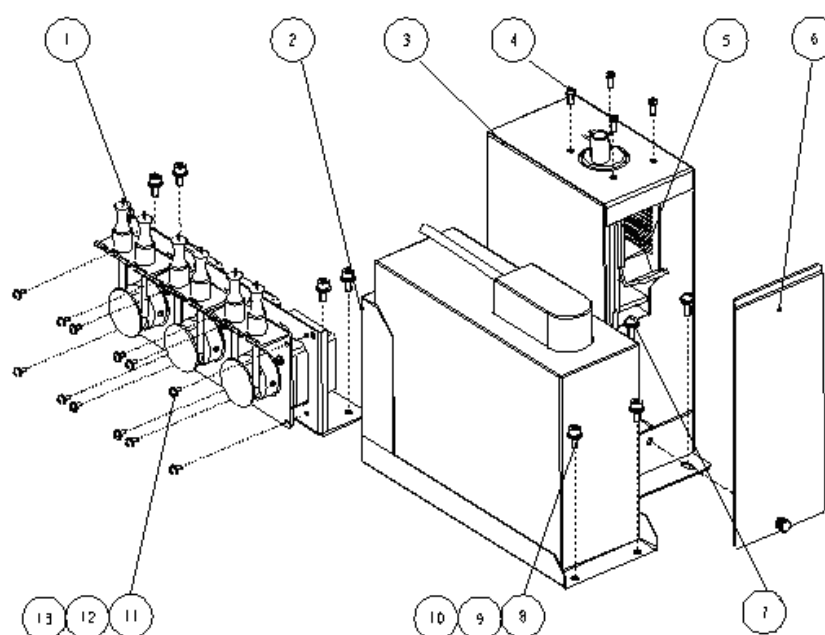
The photometric system, located in the analyzing unit, measures the absorbance of the reaction mixture in the cuvette.

The photometric system provides 8 wavelengths for measurement: 340nm, 405nm, 450nm, 510nm, 546nm, 578nm, 630nm and 670nm.

1.1.1.6 ISE Unit (optional)

The ISE unit (optional) consists of ISE module, pump module and reagent module, and can measure the concentration of Na⁺, K⁺ and Cl⁻ in serum, plasma and diluted urine.

Figure 1-7 ISE Unit



No.	Description
1	Peristaltic Pump Bracket
2	Reagent Pack Seat
3	Shielding Box
4	Untapered Tapping Screw
5	4-channel ISE Module
6	Shielding Box Cover
7	Pan Head Screw M4x12
8	Plain Washer GB97.1 4
9	Spring Washer GB93 4
10	Cheese Socket Head Screw M4x10
11	Plain Washer GB97.1 2.5
12	Spring Washer GB93 2.5
13	Cross Pan Head Screw M2.5x6

The volume of the serum or plasma sample is 70 μ l and that of the diluted urine sample is 140 μ l. The dilution ratio of the urine sample is 1:10 (1 part of urine sample and 9 parts of urine diluent).

There are five electrodes including Li+(Spacer), Na⁺, K⁺, Cl⁻ and reference electrodes in the ISE module.

Reagent module is integrated with Calibrant A, Calibrant B, waste containers and a chip which indicates the volume of the reagents.

1.1.2 Operation Unit

The operation unit, a computer with the operating software of Chemistry Analyzer installed, controls the running, operation, and data processing of the analyzing unit.

1.1.3 Output Unit

The output unit is a printer that prints out test results and other related data.

1.2 Software Introduction


1.2.1 Software Interface


The main screen of the operating software is divided into the following areas.

① System status area

This area is located at the top of the screen and displays the system status, reaction disk temperature, LIS connection status and current date/time.

② Small buttons area

Click the small button . The Operation Guide is displayed, directing you to operate the system correctly.

Click the small button . The version of software is displayed.

③ Group buttons area

The group buttons are located below the system status area and includes **Reagent**, **Calibration**, **QC**, **Status**, **Statistics**, **Parameters**, **Setup** and **Maintenance**.

Click a group button. The relevant working page will be displayed.

④ Shortcut buttons area

The shortcut buttons are located on the leftmost column of the screen and include **Sample Request**, **QC Request**, **Start**, **Probe Stop**, **Stop**, **Results**, **Replace**, **Relog** and **Exit**.

Once a shortcut button is clicked with mouse button, corresponding operation will be performed.

⑤ Working page area

The middle part of the screen is the working page area. This area displays relevant parameters, procedures, results and graphs.

In the lower part of the working page lies the indication area, which displays explanation of the element pointed by the mouse pointer.

⑥ Operator area

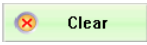
The name of current operator is displayed in the lower left corner of the screen.

⑦ Warning messages area

The bottom area of the screen is referred to as the warning messages area and used to display alarm and error messages of the system.

By selecting ◀ or ▶, you can view the previous or next alarm/error message.

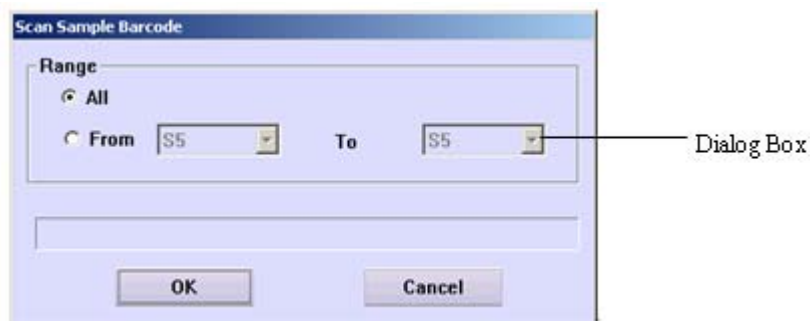
⑧ Clear button

Click  to clear the contents displayed in the warning messages area.

1.2.2 Screen Elements

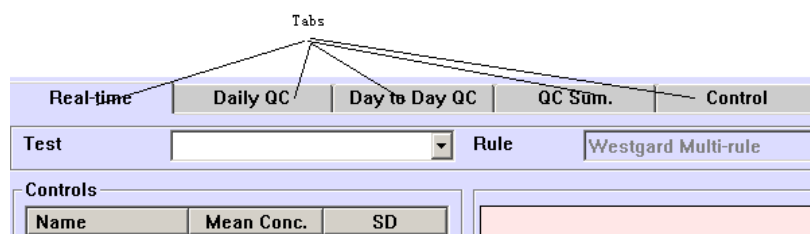
■ Dialog box

Dialog box is the most ordinary component for man-machine conversation. An example of a dialog box is shown below.



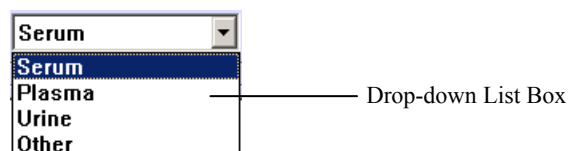
■ Tab

Clicking a tab enables you to access the working page that it indexes. An example of tabs is shown below.



■ Drop-down list box

A drop-down list box allows you to select an item from the list. An example of a drop-down list box is shown below.



■ Buttons

Clicking a button enables you to access the function that it indexes. An example of a button is shown below.



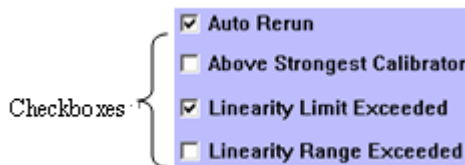
■ Radio button

On screens which display a group of radio buttons, only one item can be selected by placing a checkmark in it. An example of radio buttons is shown below.





■ Checkbox

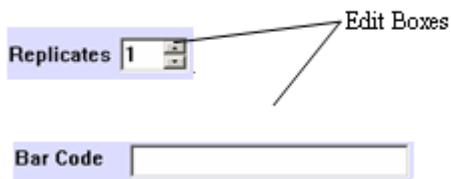
On screens which display a group of checkboxes, multiple items can be selected by placing a checkmark in the box. An example of checkboxes is shown below.



■ Edit box

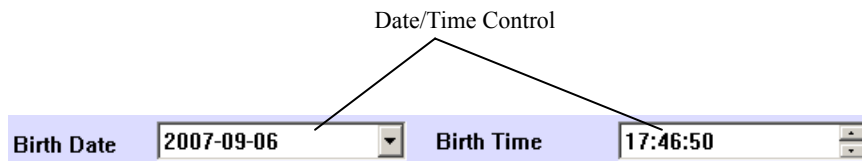
An edit box allows you to enter characters from keyboard. An example of edit boxes is shown below.

There're two types of edit boxes, one can only accept characters input from the keyboard, while the other can accept characters not only input from the keyboard but also selected by clicking  or .



■ Date/Time control

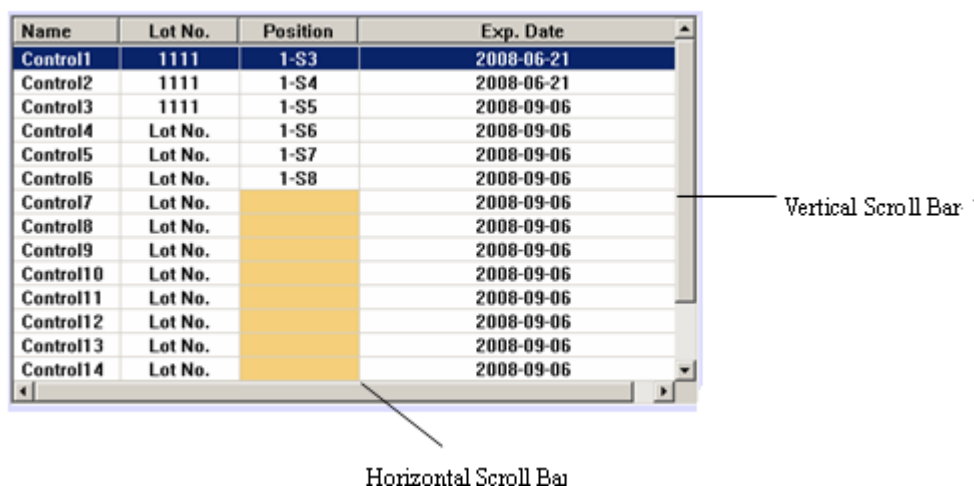
A date/time control is where you can set up the date/time and allows you to enter directly or select from the drop-down list box. An example of date/time control is shown below.



■ Scroll bar

A scroll bar will appear on some screens when the displayed contents are too many for one screen. An example of scroll bars is shown below.

Clicking and holding the scroll bar, you can drag it left/right or up/down to see the hidden contents.



Name	Lot No.	Position	Exp. Date
Control1	1111	1-S3	2008-06-21
Control2	1111	1-S4	2008-06-21
Control3	1111	1-S5	2008-09-06
Control4	Lot No.	1-S6	2008-09-06
Control5	Lot No.	1-S7	2008-09-06
Control6	Lot No.	1-S8	2008-09-06
Control7	Lot No.		2008-09-06
Control8	Lot No.		2008-09-06
Control9	Lot No.		2008-09-06
Control10	Lot No.		2008-09-06
Control11	Lot No.		2008-09-06
Control12	Lot No.		2008-09-06
Control13	Lot No.		2008-09-06
Control14	Lot No.		2008-09-06

■ List

A list displays the names of tests and profiles. An example of a list is shown below.

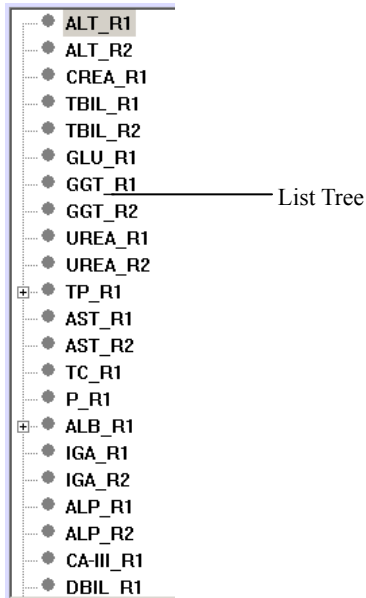
Click a test to select it, and click it again to deselect.

ALT	CREA	TBIL	GLU
GGT	UREA	TP	AST
TC	P	ALB	IGA
ALP	CA-III	DBIL	CK
AMY	LDHL	TG	UA
HDL	LDL	MG	APOA1
LP[A]	Idhp	H2O	AMY-S

■ List tree

A list tree shows the affiliation among options. An example of a list tree is shown below.

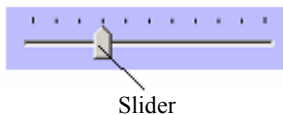
Click “-” to hide the subordinate options, and “-” becomes “+”. Click “+” to expand the subordinate options and display their affiliation, then “+” turns to be “-”. If an option has no subordinate options, there is no “+” or “-” to the left of the option.



■ Slider

A slider is used to select a level continuously. An example of a slider is shown below.

Clicking and holding the slider, you can drag it to desired scale.



2 *Installation*



WARNING

The system should be installed only by technicians of our company or authorized by our company.

Before installing the system, you should prepare a proper site for installation.

If you need to relocate the system, please contact our customer service department or your local distributor.

2.1 Unpacking

When you receive the system, carefully inspect the package. If you see any signs of mishandling or damage, file a claim immediately with our customer service department or your local distributor.

After opening the package, check the delivered goods against the packing list as well as the appearance of the system. If you find anything missing or damaged, immediately alert our customer service department or your local distributor.

2.2 Installation Requirements



CAUTION

Make sure the system is installed in a place meeting the requirements. Otherwise, it will not perform as promised.

2.2.1 Environmental Requirements

- The system is for indoor use only.
- The bearing platform should be level with gradient less than 1/200.
- The bearing platform should be able to bear 75Kg weight.
- The bearing platform should be 500mm-800mm high.
- The installation site should be well ventilated.



CAUTION

The system radiates heat when operating. A well-ventilated environment helps keep the room temperature stable. Use ventilation equipment if necessary. Do not expose the system to direct draft that may lead to unreliable results.

- The installation site should be free of dust as much as possible.
- The installation site should not be in direct sun.
- The installation site should not be close to a heat or draft source.
- The installation site should be free of corrosive gas and flammable gas.
- The bearing platform should be free of vibration.
- The installation site should not be disturbed by great noise or power supply.
- The system should not be placed near brush-type motors and electrical contacts that are frequently powered on and off.
- Do not use such devices as mobile phones or radio transmitters near the system. Electromagnetic waves generated by those devices may interfere with operation of the system.
- The altitude height of the installation site should be lower than 2000 meters.

2.2.2 Power Requirements

- Power supply: 100-130V/200-240V~, 50/60Hz, three-wire power cord and properly grounded.
- The system should be connected to a properly grounded power socket.
- The distance between the power socket and the system should be less than 3 meters.



WARNING

Make sure the power socket is grounded correctly. Improper grounding may lead to electric shock and/or equipment damage.

Be sure to connect the system to a power socket that meets the above-mentioned requirements and has a proper fuse installed.

2.2.3 Temperature and Humidity Requirements

- Operating temperature: 15°C-30°C, fluctuation $\leq \pm 2^{\circ}\text{C}/\text{H}$
- Relative humidity: 35%RH-85%RH, without condensation



CAUTION

Operating the system in an environment other than the specified may lead to unreliable test results.

If the temperature or relative humidity does not meet the above-mentioned requirements, be sure to use air-conditioning equipment.

2.2.4 Water Supply and Drain Requirements

- The supplied water must meet requirements of the CAP Type II water, with specific resistance no less than $0.5(\text{M}\Omega \cdot \text{cm}@25^\circ\text{C})$.
 - The water temperature should be within 5°C - 32°C .
-



BIOHAZARD

Dispose of waste liquids according to your local regulations.



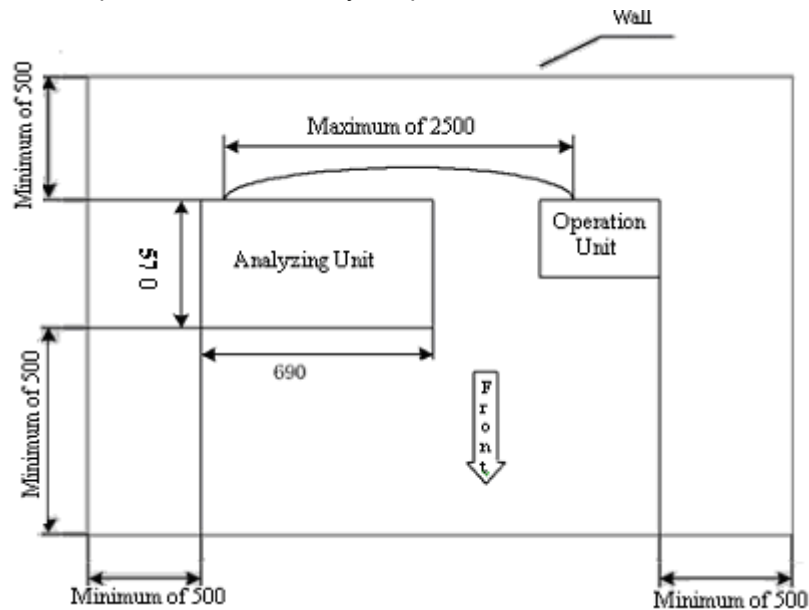
CAUTION

The supplied water must meet requirements of the CAP Type II water; otherwise insufficiently-purified water may result in misleading measurement.

2.2.5 Space and Accessibility Requirements

The system should be installed and used meeting the space and accessibility requirements as shown below.

Figure 2-1 Space and Accessibility Requirements



2.3 Connecting Deionized Water Tank



CAUTION

When placing the deionized water tank, ensure the top of the tank is lower than the bearing platform of the analyzer.

Ensure the deionized water pickup tube is not blocked, bent, or twisted.

- 1 Place the Power to OFF.
 - 2 Connect the filter with the pickup tubes. Refer to **5.5.2 Replacing Filter Assembly** (step 2 - 3) for instructions.
 - 3 Put the pickup tubes and the sensor into the deionized water tank, and then turn the cap of the deionized water tank clockwise.
-



CAUTION:

Make sure that the filter sink smoothly to the tank bottom and does not twist with the floater connecting rod.

- 4 Put the deionized water tank on an appropriate place. Do not tip it.
 - 5 Plug the red and the green connectors to their counterparts marked DEIONIZED WATER on the rear side of the analyzing unit and turn the connectors clockwise until secure.
 - 6 Plug the sensor connector to its counterpart marked D-SENSOR on the rear side of the analyzing unit and turn it clockwise until secure.
-



NOTE

The tank should be cleaned every week. Use brush to clean the tank walls if necessary. Check for contamination and impurity on the tank walls and bottom, after cleaning.

If the tank will not be used for a long time, put it upside down to drain the water and then store it in dry and clean environment. Clean it with water before reusing.

2.4 Connecting Waste Tank



BIOHAZARD

Wear gloves and lab coat and, if necessary, goggles.



CAUTION

When placing the waste tank, ensure the top of the tank is lower than the bearing platform of the analyzer.

Ensure the waste tube is over the tank and not blocked, bent, or twisted. A blocked, bent or twisted waste tube may lead to wastewater overflow that may damage the analyzer.

- 1 Place the Power to OFF.
- 2 Put the waste tube and sensor next to the waste tank cap into the waste tank, then tighten the cap clockwise.
- 3 Set the waste tank on an appropriate place.
- 4 Connect the other end of the waste tube to its counterpart on the right panel of the analyzer marked WASTE. Keep pressing the pin on the waste connector marked WASTE on the right side of the analyzing unit and grab the waste tap and insert it to the connector.
- 5 Plug the sensor connector to its counterpart marked W-SENSOR on the right side of the analyzing unit and turn it clockwise until secure.

2.5 Installing/Removing Sample/Reagent Disk



WARNING

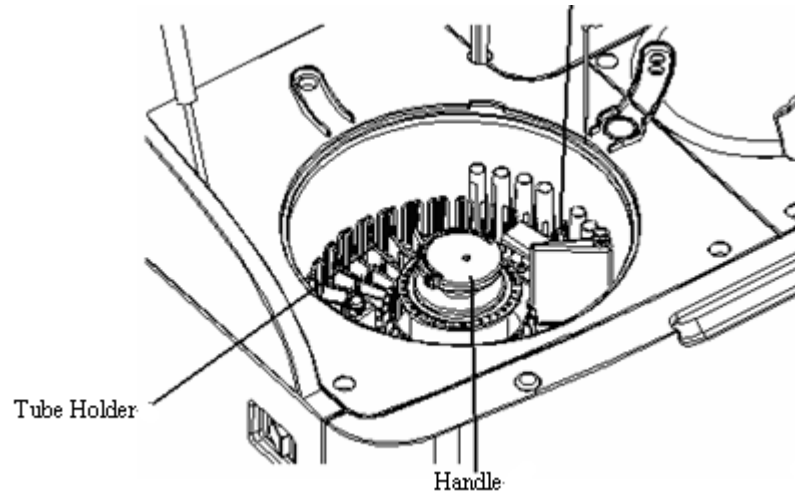
Before installing/removing the sample/reagent disk, make sure the Power is placed to OFF and the sample/reagent disk has been stopped.



BIOHAZARD

Wear gloves and lab coat and, if necessary, goggles.

Figure 2-2 Sample/Reagent Disk



To install the sample/reagent disk, keep the handle at the vertical position, align the hole of the handwheel to the pin of the rotor, gently lower the sample/reagent disk all the way down and move the handle back to the horizontal position to secure the disk to the rotor.

To remove the sample/reagent disk, first shift the handle from the horizontal position to the vertical position. Then grab the handle or handwheel and pull the disk upward to remove it from the rotor.



CAUTION

Make sure the disk cover is closed; otherwise it may degrade the refrigeration and damage the probe.

Before running the analyzing unit, make sure that the disk cover is closed properly. Otherwise the probe may be damaged.

The sample/reagent compartment and the sample/reagent disk may be contaminated during measurement. If samples spill in the compartment or on the disk, wipe them with cloth soaked with water or disinfectant after placing the Power to OFF.

2.6 Installing/Removing Sample Tubes



WARNING

Before installing/removing the sample tubes, make sure the sample/reagent disk and the probe have been stopped.

Do not use sample tubes other than the specified ones.



BIOHAZARD

Wear gloves and lab coat and, if necessary, goggles.

To load sample tubes, insert the tube into the tube holder until the bottom of the tube contacts the groove of the tube rack.

To remove sample tubes, grab the tube and pull it upward to remove it from the tube holder.

2.7 Installing/Removing Sample Tube Rack



WARNING

Before installing/removing the sample tube rack, make sure the sample/reagent disk and the probe have been stopped.

Do not use reagent bottles other than the specified.



BIOHAZARD

Wear gloves and lab coat and, if necessary, goggles.

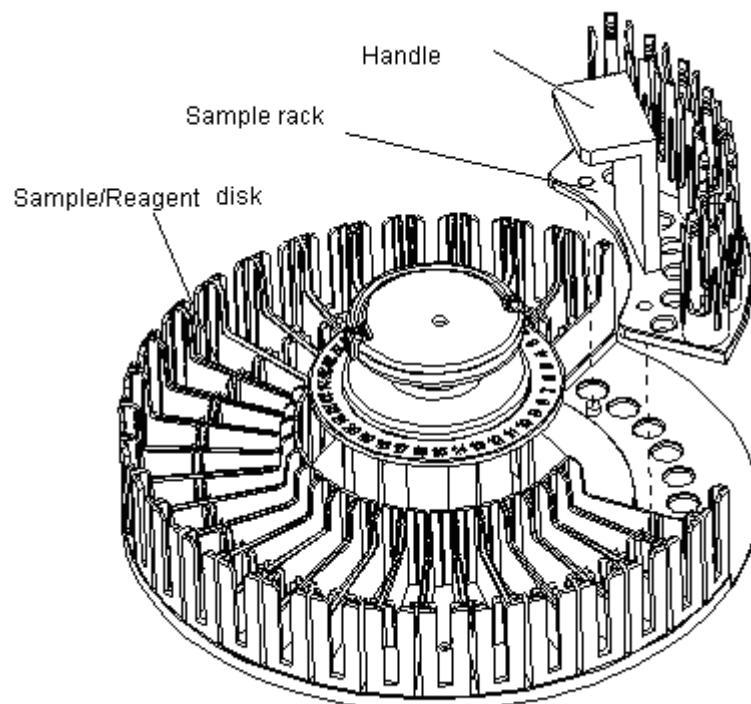


CAUTION

Exercise caution while installing or removing the sample tube rack so that no liquid will spill out of the tubes.

To load or unload sample tubes quickly, you can install or remove the entire sample rack from the sample/reagent disk. To remove the sample rack, grab the handle on the sample rack and pull the handle upwards to remove the sample rack. To install the sample rack, grab the handle on the sample rack, align the holes at the bottom of the rack to the counterpart pins on the sample/reagent disk, and then install the sample rack with its arc protrusion at the bottom fitting into the groove on the sample/reagent disk.

Figure 2-3 Sample Rack



2.8 Installing/Removing Reagent Bottles



WARNING

Before installing/removing the reagent bottles, make sure the sample/reagent disk and the probe have been stopped.

Do not use reagent bottles other than the specified.

Some reagents may hurt human skins. Exercise caution when using the reagents. In case your skin or clothes contact them, wash them off with clean water. In case the reagents spill into your eyes, rinse them with much water and consult an oculist.

To load reagent bottles, insert the bottle into the bottle holder until the bottom of the bottle contacts the groove of the holder.

To remove the reagent bottles, grab the bottle and pull it upward to remove it from the bottle holder.

2.9 Installing/Removing Cuvettes



WARNING

Be sure to install/remove the cuvettes only after the reaction disk stop completely, or injury may occur.

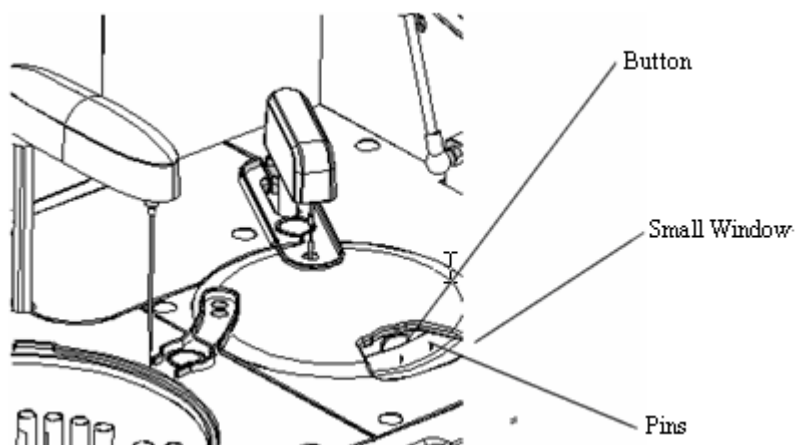


BIOHAZARD

Wear gloves and lab coat and, if necessary, goggles.

Be sure to dispose of the used cuvettes in compliance with the local regulations.

Figure 2-4 Reaction Disk



To install cuvettes, push forward the button on the small window to open the reaction disk, then align the holes on the cuvette segment to the pins on reaction disk and set the segment on the disk. After installing, close the small window.

To remove cuvettes, push forward the handle on the small window and open the door, and then take out the current cuvette segment.



CAUTION

The reaction cuvettes are for single use only. If they are reused, the system performance may be degraded.

When installing new reaction cuvettes, do not touch the light entrance of the cuvettes; otherwise accurate measurements may not be achieved or the cuvettes will be considered unqualified.

Ensure the small window on the reaction disk is always closed during measurement; otherwise, reliable test results may not be achieved.

When installing new reaction cuvettes, make sure to place them steadily on the reaction disk.

2.10 Installing/Removing ISE Components (Optional)



CAUTION:

Use the consumables recommended by our company. Other consumables may degrade the system performance.



NOTE:

The ISE unit (optional) should be on power all the time.

2.10.1 Installing/Removing Reagent Pack



WARNING:

Be sure to dispose of the used Reagent Pack in compliance with the local regulations.

Before performing the installation or removing, make sure the analyzer is powered off.



BIOHAZARD:

Wear gloves and lab coat and, if necessary, goggles.

To install Reagent Pack, remove the red caps from Reagent Pack first and push the wand just above the top of Reagent Pack. Make sure that the three pipe adapters at the bottom of the wand are opposite to those on the top of Reagent Package, then push down the wand to Reagent Package. The wand will only fit one way.

Figure 2-5 Remove ISE unit door of analyzer



Figure 2-6 Install Reagent Pack Step 1

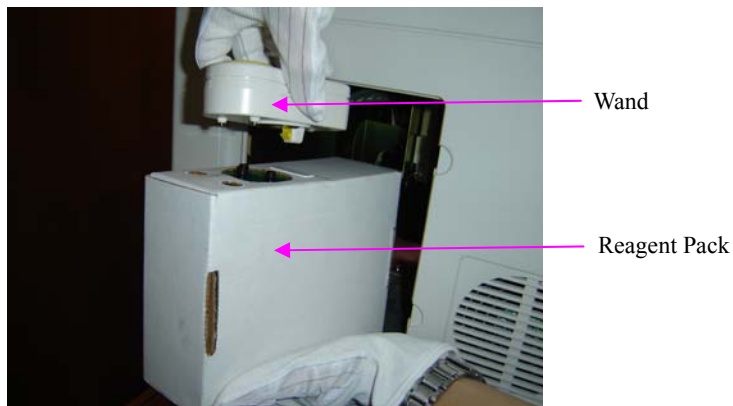


Figure 2-7 Install Reagent Pack Step 2



In the end put the Reagent Pack into the shelf.

Figure 2-8 Install Reagent Pack Step 3



To remove Reagent Pack, disconnect the wand from the top of the Reagent Pack by pushing down the yellow button in the wand, which makes the wand and Reagent Pack disconnected. Set the wand on the table surface, which should not leak. Carefully remove the used Reagent Pack from the Chemistry Analyzer and dispose of it properly.

Figure 2-9 Remove Reagent Pack



Push down this button

To make the Reagent Pack ready to use, please refer to the steps described in **5.6.7.1 Replacing Reagent Pack.**

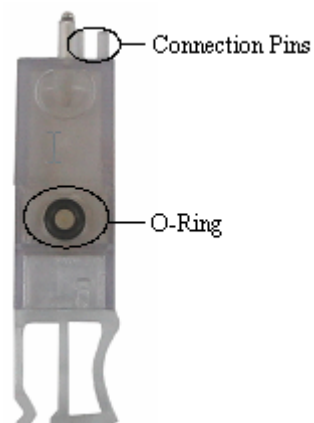
2.10.2 Installing/Removing Electrodes



NOTE:

The electrode storage for K is different from the other electrodes. For there is some certain kind of solution in the lumen of the electrode, a tape covering both ends of the lumen can be seen. So whenever unpacking these electrodes, remove the tape first. If some of the solution leaks outside of the electrode, it should be wiped before installation.

Each electrode including the reference electrode has an O-ring on one side of its lumen, so ensure the side with the O-ring towards up when installing the electrodes. If the O-ring is missing, replace with a new one. Extra two O-rings are supplied in the electrode boxes.



For the reference electrode, if necessary, soak the electrode in warm water until the lumen of the electrode has been cleared of salt build-up.

Before performing the installation or removing, make sure the analyzer is powered off.



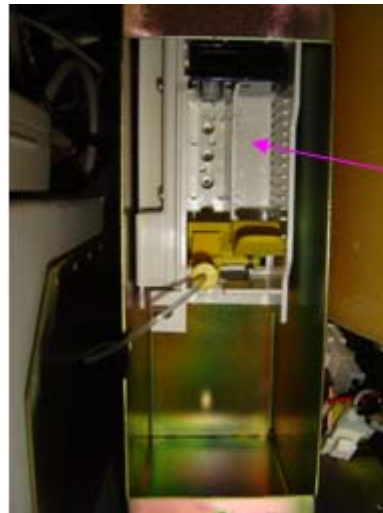
BIOHAZARD:

Wear gloves and lab coat and, if necessary, goggles.

To install the electrodes, follow the steps below:

- 1 Place the POWER to OFF.
- 2 Unscrew the captive screw of the ISE module shielding box and make the cover towards outside. Unscrew the cover and you will see the electrodes housing.

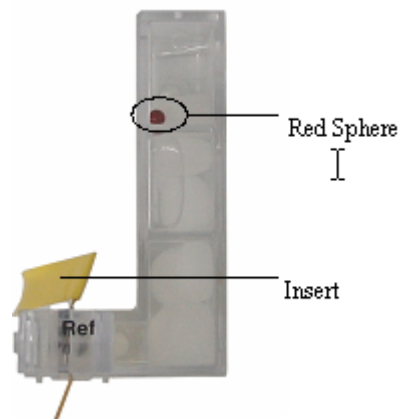




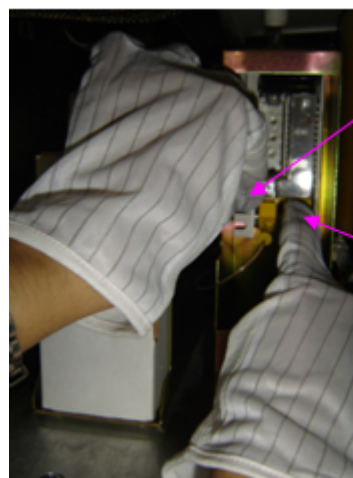
I

Electrode Housing

- 3 The reference electrode is the first to be installed.
 Open the electrode from its protective packaging and remove the insert from the lumen of the reference electrode.
 Make sure that the red sphere in the reference electrode floats on the top of the internal fill solution in the reservoir.



Place the reference electrode inside the housing by pressing down the compression plate and push it straight against the back of the housing. Release the compression plate and ensure the electrode cannot be easily moved.



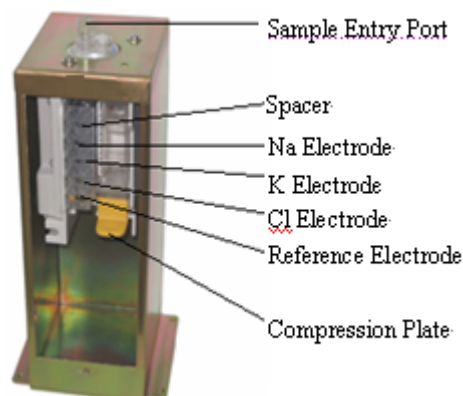
Insert the reference electrode

Press the compression plate

- 4 Remove the Chloride electrode from its protective packaging and place it

in the ISE module housing in the same way as the reference electrode.

- 5 Repeat the process for the Potassium electrode.
- 6 Repeat the process for the Sodium electrode.
- 7 Repeat the process for the Lithium electrode or the spacer.
- 8 Push all the electrodes simultaneously to ensure they are in correct alignment.



All the electrodes for spacer, Na, K and Cl are of the same size and shape. Connection pins at the rear of each electrode are different and ensure that the electrodes are inserted in the correct order. So if one of the electrodes can not be easily pushed into the housing, check the electrode first then repeat the installation process.

- 9 Install the shielding box cover.
- 10 Close the ISE unit door.

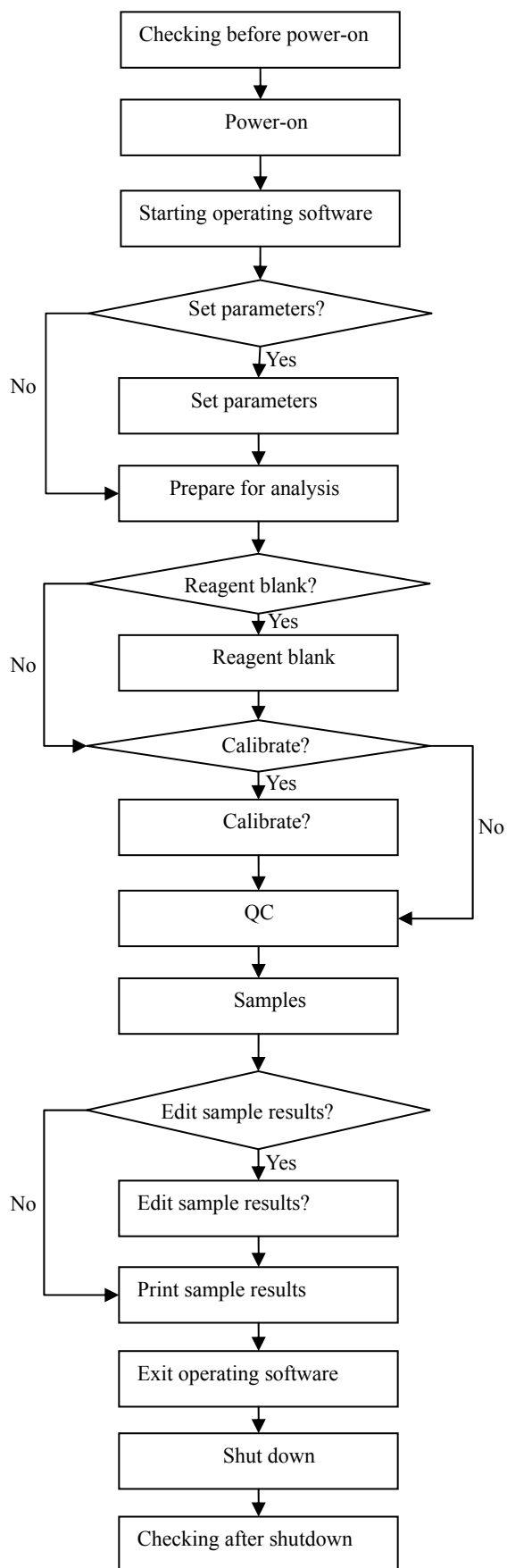
To remove the electrodes, follow the steps below:

- 1 Place the POWER to OFF.
- 2 Open the ISE unit door.
- 3 Unscrew the cover of the shielding box, and you will see the electrode housing.
- 4 Take the electrode(s) out from the housing by pressing down the compression plate(s) in the opposite sequence of installing.

3 *Basic Operations*

This chapter provides step-by-step procedures to operate the system for basic tasks.

3.1 General Operating Procedure



3.2 Preparing for Analysis

3.2.1 Checking before Powering On

You should perform the following operations before powering on the analyzer.



BIOHAZARD

Wear gloves and lab coat and, if necessary, goggles when performing the following operations.

- 1 Check the power supply and make sure it can supply proper voltage for the analyzer.
 - 2 Check the connections among the analyzing unit, operation unit and printer. Make sure the connections are right and secure. Check the power cords of the analyzing unit, operation unit and printer, and make sure they are well connected to the power sockets.
 - 3 Check and make sure sufficient printing paper is prepared for the printer. If not, feed more printing paper.
 - 4 Ensure wash solution has been placed in position 35 and sufficient distilled water in position 36 of the reagent disk. If an ISE module is configured, please check if cleaning solution is placed in position 33 and urine diluent in position 34 of reagent disk.
-



WARNING

Poisonous gas will be produced if acid wash solution is mixed with alkaline wash solution. Do not mix the acid wash solution with the alkaline one.

Some wash solutions may hurt human skins. Exercise caution when using the wash solution. In case your skin or clothes contact them, wash them off with clean water. In case the wash solutions spill into your eyes, rinse them with much water and consult an oculist.



NOTE

We have specified the following wash solutions:

Acid: 0.1mol/l hydrochloric acid; Alkaline: javel water with 0.5% active chlorine.

You should dilute the sodium hypochlorite solution at appropriate ratio according to the available chlorine contained in it.

We recommend the acid and alkaline wash solutions be used alternately. For instance, if the acid wash solution is used at current startup, the alkaline one should be used at next startup.

- 5 Check the connection of deionized water tubing. See **5.2.3Checking Connection of Deionized Water** for details.
- 6 Check the connection of waste tubing. See **5.2.4Checking Connection of Waste Water** for details.

- 7 Check the syringe carefully. See **5.2.5Checking Syringe** for details.
- 8 Check the probe as directed by steps 1-5 in **5.2.6Checking Probe**.
- 9 Check the mixing bar as directed by steps 1-3 in **5.2.7Checking Mixing Bar**.
- 10 Check the deionized water tank. See **5.2.1Checking Remaining Deionized Water** for details.
- 11 Check if the waste tank is empty. If not, empty the waste tank as directed by **5.2.2Emptying Waste Tank**.

3.2.2 Powering On

Connect the power cord of the system to the socket, and then switch on the powers in the sequence presented below:

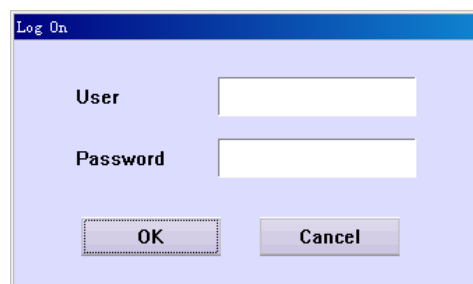
- 1 Place the Main Power to the ON position.
- 2 Place the Power to the ON position.
- 3 Turn on the monitor of the computer.
- 4 Turn on the computer.
- 5 Turn on the printer.

3.2.3 Starting the Operating Software

- 1 After you have logged on the Windows operating system, double-click the shortcut icon of the operating software on the desktop or select the operating software program from [Start] to start up the operating software.

When started up, the analyzer will check automatically the operation system and resolution of the screen, turn off the screen saver, check color configuration, initialize the database and examine the printer.

If all checks are passed, the following dialog box is displayed. Enter the username and password, and then click **OK**.



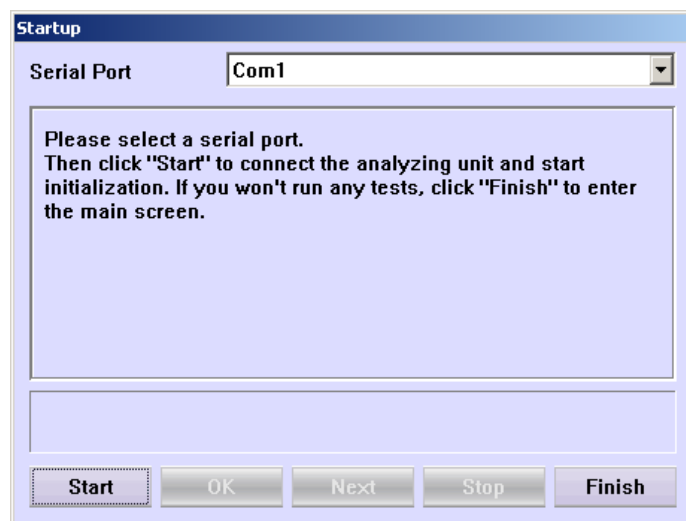
NOTE

The resolution of the screen must be 1024x768. The color configuration must be at least 8 bits.

The username of the system administrator is "Admin" which is same as the initial password.

Please note that the password is case sensitive. You are recommended to change the password when logging in for the first time, to prevent others from abusing the authorities of Admin. Refer to **4.16.3User** for details.

- 2 Select a serial port from **Serial Port** in the **Startup** dialog box, then click **Start** to initialize the system. After that, operate according to the screen prompt until the main screen of the operating software is displayed.



NOTE

Place new cuvettes to the reaction disk when replacing used cuvettes.

Refer to **4.7Replace** for detailed information about the operation of the cuvettes replacing screen.



CAUTION

You must not start analysis until the system status area of the screen displays "**Standby**" and the analyzer has been turned on for at least 30 minutes.



NOTE

Check the probe as directed by steps 6-9 in **5.2.6Checking Probe**.

Check the mixing bar as directed by steps 4-5 in **5.2.7Checking Mixing Bar**.

If this is the first time the analyzer is installed, please follow the instructions indicated in **5.5.2 Replacing Filter Assembly** (step 4) to expel air from the filter assembly.

3.2.4 Setting up the Analyzer

The analyzer will not function properly unless it is properly set up.

If this is the first time the analyzer being used you must complete all the following settings. Even in daily use, you should perform the following configuration as needed.

Before requesting tests, perform the following steps to finish the settings:

- To set the options regarding the basic parameters of the system and data dictionaries, refer to **4.16.1System**.
- To set the options regarding the hospital information, refer to **4.16.2Hospital**.
- To set the options regarding parameters of calibrators, refer to **4.11.3Calibrator**.
- To set the options regarding parameters of controls, refer to **4.12.4Control**.
- To set the options regarding test parameters, reference, calibration rule and quality control (QC) rule, refer to **4.15.1Test**.
- To set the options regarding the reagent parameters, refer to **4.10Reagent**.
- To set the options regarding the carryover information among tests, refer to **4.15.6Carryover**.
- To set the options regarding the printing parameters, refer to **4.16.4Print**.

3.2.5 Preparing Reagents

Load reagents to their assigned positions on the reagent disk, and then remove the bottle caps. Please select correct bottle type as configured so that the reagent inventory can be checked accurately.



WARNING

The probe tip is sharp and can cause puncture wounds. To prevent injury, exercise caution when working around the probe.

Some reagents may hurt human skins. Exercise caution when using the reagents. In case your skin or clothes contact them, wash them off with clean water. In case the reagents spill into your eyes, rinse them with much water and consult an oculist.

3.3 Starting Analysis

3.3.1 Programming Reagent Blank



CAUTION

Reagent blank is vital to obtaining correct analysis results. The blank results can assist in determining whether the reagents have expired, or whether the reaction background should be deducted, and in eliminating the absorbance changes caused by the reagents themselves. We recommend the reagent blank be run on a daily base.

The analyzer will use the result of the previous reagent blank run for double-reagent tests that use endpoint method if no new reagent blank result is available.

To request reagent blanks, refer to **4.11.1Calibration Request**.

To run reagent blanks, refer to **4.3Start**.

To view reagent blank results, refer to **4.11.2Results**.

3.3.2 Programming Calibrators



CAUTION

You need to run the calibration again when the measurement conditions are changed, such as reagent lot, test parameters, light source, etc.

To request calibrations, refer to **4.11.1 Calibration Request**.

After requisition is finished, place the calibrators in assigned positions on the sample disk.

Run calibration as directed by **4.3 Start**.

To view calibration results, refer to **4.11.2 Results**.

3.3.3 Programming Controls



CAUTION

If **Auto QC** on the **System** screen is selected and **QC Interval** on the **Test** screen is not 0, the analyzer will automatically insert QC tests among sample tests.

To request QCs, refer to **4.2 QC Request**.

After requisition is finished, place the control samples in assigned positions on the sample disk.

To run QCs, refer to **4.3 Start**.

To check QC results, refer to **4.12.1 Real-time QC**, **4.12.2 Daily QC** and **4.12.3 Day to Day QC**.

3.3.4 Programming Samples

To request samples, refer to **4.1 Sample Request**.



NOTE

STAT samples are requested in the same way as routine ones except that **STAT** on the **Sample Request** screen should be selected during STAT sample requesting.

After requisition is finished, place the samples in assigned positions on the sample disk.

Minimum sample volume: dead volume of the sample plus total sample volume for all the tests.

Dead volume of sample varies from tubes and is shown in the following table.

Tube Type	Microtube	Blood collecting tube	Plastic tube
Dead Volume	≤300μl	≤500μl	≤500μl

To run samples, refer to **4.3Start**.

To check sample results, refer to **4.6Results**.

3.4 Processing Results

3.4.1 Editing Test Results



CAUTION

Test results can only be edited by authorized personnel.

To edit results of one or more sample runs, refer to **4.6.2.4Edit Results**.

To make linear transform or calibration transform to the results of one or more tests, refer to **4.6.2.3Compensate Results**

3.4.2 Printing Test Results

To print test results, refer to **4.6.2.8Print Results**.

3.5 Finishing Analysis

3.5.1 Exiting the Operating Software

When all analysis is finished and the system is in standby status, select **Exit** from the main screen to exit the operating software. Refer to **4.9Exit** for details.

3.5.2 Powering Off

After exiting the Windows operating system, following this procedure to turn off the powers:

- 1 Turn off the printer.
- 2 Turn off the monitor of the computer.
- 3 Place the Power to the OFF position.

**NOTE**

The refrigerator still functions after the Power is placed to OFF. To shut down the refrigerator, place the Main Power to OFF.

3.5.3 Operations after Powering Off

**BIOHAZARD**

Wear gloves and lab coat and, if necessary, goggles.

- 1 Cover every reagent bottle on the sample/reagent disk.

**NOTE**

If the Main Power is placed to OFF, take the reagents from the reagent disk and put them into an external refrigerator.

- 2 Remove the calibrators, controls and samples from the sample/reagent disk.
- 3 Empty the waste tank. Refer to **5.2.2Emptying Waste Tank** for details.
- 4 Check the surface of the analyzing unit for stains and wipe them off with clean soft cloth, if any.

4 *Advanced Operations*

4.1 Sample Request

Click the **Sample Request** button to enter the **Sample Request** screen, as shown in Figure 4-1, where you can check the requested samples and request new ones.

After requisition is finished, place the samples in assigned positions on the sample disk.

Minimum sample volume: dead volume of the sample plus total sample volume for all the tests.

Dead volume of sample varies from tubes and is shown in the following table.

Tube Type	Microtube	Blood collecting tube	Plastic tube
Dead Volume	≤300μl	≤500μl	≤500μl

Figure 4-1 Sample Request Screen



NOTE

In the **Tests** field, different background colors of the test refer to different meanings:

Blue means the test is selected;

White means the test is selectable;

Gray means the test is unselectable, and if the mouse pointer is stopped on it for a while, the system will remind you of the reason why it is unselectable.

The **Profiles** field and the **Off-system Tests** field are the same as the **Tests** field.

The following table explains the parameters on the screen.

Parameter	Description
Sample Disk	Select a virtual sample disk on which the sample locates.
Samples	It refers to the requested samples or the ones being requested on the selected sample disk. The Tests column shows multiplication of No. of tests for the sample and No. of replicates. <ul style="list-style-type: none"> • << to the first sample in the list. • < to the previous sample in the list. • > to the next sample in the list • >> to the last sample in the list

Parameter	Description
No.	<p>It refers to the sample ID, which includes the starting No. and ending No.</p> <p>The No. can be assigned by the system automatically, or entered manually.</p> <p>You should enter the starting No. in the first edit box and the ending No. in the second one.</p> <p>If the starting No. is same as the ending No., the system will consider it as one sample by default. When the latter is greater than the former, it indicates a batch of samples.</p> <p>You must use different No. for different samples within one day.</p>
Position	<p>It refers to position of the sample on the selected virtual sample disk.</p> <p>The position can be assigned by the system automatically, or selected from the drop-down list box by the operator manually.</p> <p>For single sample, it refers to the position of this sample; for a batch of samples, it refers to the position of the sample with starting No., and positions of other samples will be assigned by the system accordingly.</p>
Replicates	It refers to times of the same sample run. 1 is default, which means once only.
Type	Select a sample type from the drop-down list box. It includes Serum, Plasma, Urine and Other.
Bar Code	Barcode information of the selected sample.
STAT	When selected, it means that the sample(s) currently requested are stat sample(s).
Samp. Blank	When selected, it refers to running a sample blank before starting analysis. The system tests the mixed absorbance (endpoint) or the absorbance change rate (non-endpoint) of the mixture of the sample and the distilled water instead of reagent.
Predilution Mode (drop-down list box)	<p>Dilution mode. There are three options: None, Auto and Manual.</p> <p>None: It means the sample will not be diluted before be analyzed.</p> <p>Auto: It means the analyzer automatically mixes specified amount of distilled water and sample in a clean cuvette and aspirates the diluted sample for reacting during analysis.</p> <p>Manual: It means you should dilute the sample manually and place it on the sample disk.</p>
Sample Volume (Edit box in middle)	It refers to the amount of sample to be diluted.
Dilution Ratio (Edit box on right side)	<p>It refers to the ratio at which the sample will be diluted. It can be calculated using this formula:</p> <p>Dilution ratio = Diluted sample volume / Original sample volume</p>

The following table introduces the buttons on the screen.

Button	Function
Details	<p>After selecting a sample from Samples, click this button to pop up the Sample Information dialog box, where you can check and edit the detailed information of the sample.</p> <p>For more information about the Sample Information dialog box, refer to 4.1.1 Sample Information.</p>
Delete	<p>After selecting a sample from Samples, click this button to pop up the Delete dialog box, where you can delete the sample or release its position.</p> <p>This button is not available for the sample being requested.</p> <p>For more information about the Delete dialog box, refer to 4.1.2 Delete a Sample.</p>
Change Pos.	<p>Click this button to pop up the Change Sample Position dialog box, where you can change positions of samples.</p> <p>For more information about the Change Sample Position dialog box, refer to 4.1.3 Change Position.</p>
Cancel	<p>After requesting new samples or modifying the information of a requested sample, click this button to cancel the requests or modification.</p> <p>Refer to 4.1.4 Requesting Samples or Modifying Information for detailed operations.</p>
OK	<p>After requesting new samples or modifying the information of a requested sample, click this button to finish requesting or save modification.</p> <p>Refer to 4.1.4 Requesting Samples or Modifying Information for detailed operations.</p>
Print List	<p>Print the samples which are not finished in Samples</p>
Download	<p>Click this button to download the Down Sample Information from LIS dialog box.</p> <p>Refer to 4.1.5 Download Sample Information for detailed operations.</p>



NOTE

When you re-request tests for the requested sample, the tests which have been requested for the sample and are not requested this time will be invalidated, no matter the tests which have been requested for the sample have been run or not.

4.1.1 Sample Information

At the **Sample Request** screen, select a sample and click **Details** to pop up the **Sample Information** dialog box, as shown in Figure 4-2, where you can check and edit the detailed information of the sample.

Figure 4-2 Sample Information Dialog Box

The following table explains the parameters of the **Sample Information** dialog box.

Parameter	Description
Sample ID	No. of the sample. It cannot be edited.
Type	It includes Serum, Plasma, Urine and Other.
Replicates	It refers to times of sample run. It cannot be edited.
Position	The first edit box is No. of virtual sample disk, and the second is the sample position. Both of them cannot be edited.
Sent From	Department to which the sender belongs.
Sent By	Name of the sender.
Tested In	Department to which the tester belongs.
Tested By	Name of the tester.
Charact.	Characteristic of the sample. It includes blank (none), Hemolysis, Icterus and Lipemia.

Parameter	Description
Blood Type	Blood type of the sample.
Samp. Time	Time when the sample was sampled.
Send Date	Time when the sample was sent for analysis.
Patient	Name of the patient.
Age	Age of the patient.
Birth Date	The date when the patient was born.
Birth Time	The time at which the patient was born.
Gender	Gender of the patient.
MRN	Medical record No. of the patient.
Treated In	Department where the patient is treated.
Treated By	Doctor in charge for the patient.
Zone No.	No. of the zone where the patient stays.
Admi. No.	Admission No. of the patient.
	If Obtain Patient Information by Admission No. at Setup → System screen is selected, after you entering the admission No. here, the system will find out if the admission No. has existed in the database already. If so, the patient information corresponding to the admission No. will be obtained automatically, including Blood Type, Patient, Age, Gender, MRN, Treated In, Treated By, Zone No. and Bed No.
Bed No.	No. of the bed where the patient stays.
Bar Code	Barcode information of the sample.
SS No.	Medical insurance No. or Social insurance No.
Diagnosis	Clinical diagnosis to the patient's disease.

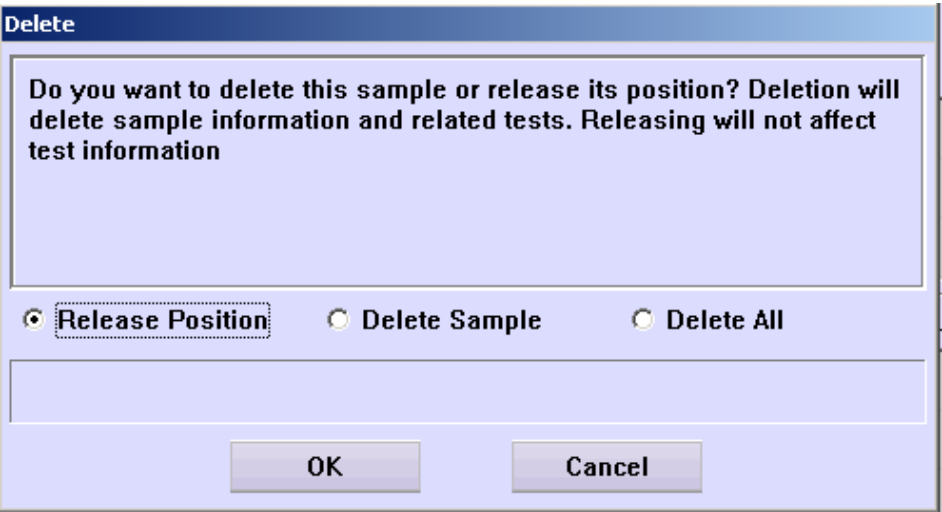
The following table introduces the buttons of the **Sample Information** dialog box.

Button	Function
Set Defaults	Click this button to set current settings as defaults for following samples.
Previous	Click this button to display the information of the previous sample.
Next	Click this button to display the information of the next sample.
OK	Click this button to save modification to the sample information in this dialog box.
Cancel	Click this button to cancel modification to the sample information in this dialog box.
Close	Click this button to close the Sample Information dialog box.

4.1.2 Delete a Sample

At the **Sample Request** screen, after selecting a sample in **Samples**, click **Delete** to pop up the **Delete** dialog box, as shown in Figure 4-3, where you can delete the selected sample or release its position.

Figure 4-3 Delete Sample Dialog Box



The following table explains the parameters of the dialog box.

Parameter	Description
Release Position	Release the sample position without deleting all tests related to this sample. It is available for the tested samples only.
Delete Sample	Delete the sample as well as the related tests.
Delete all	Delete all samples on the selected sample disk

The following table introduces the buttons of the dialog box.

Button	Function
OK	Click this button to release the selected sample position or delete the sample.
Cancel	Click this button to cancel the releasing or deletion.



CAUTION

Deleting a sample will invalidate all tests related to the sample.

4.1.3 Change Position

At the **Sample Request** screen, click **Change Pos.** to pop up the **Change Sample Position** dialog box, where you can change sample positions on the sample disk.

Figure 4-4 Change Sample Position Dialog Box

The following table introduces the buttons of the dialog box.

Button	Function
Probe stop	<p>If the system is in testing status, and the sample position to be changed or the target position is on the sample disk currently running, you should first stop the probe, the mixing bar and the sample/reagent disk.</p> <p>Click this button to stop the probe, the mixing bar and the sample/reagent disk, and the button will change into Resume.</p> <p>After exchanging the positions, click Resume to continue.</p>
Change	<p>Select the current and target sample disks the sample locates from the Original Sample Disk and Target Sample Disk, and select the current and target positions of the sample from the two Positions fields. Then click this button to change the position.</p>
Close	<p>Click this button to close the dialog box.</p>



CAUTION

Do not put the probe, the mixing bar and the sample/reagent disk on hold for a long time. Otherwise, certain analyses may be affected.

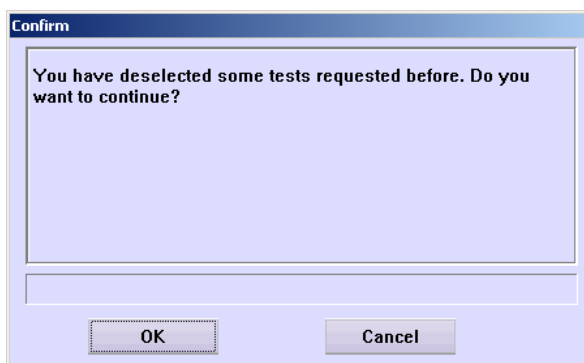
4.1.4 Requesting Samples or Modifying Information

- 1 In the **Samples** field of **Sample Request** screen, select a sample that is being requested (the samples with “#” in the front) or has been requested.
- 2 You can set sample information and tests for the newly requested samples, or modify the sample information for the requested sample.
- 3 If you want to finish requesting or save the modification, click **OK**.



NOTE

If you want to deselect one or more tests for a sample, after you clicking the **OK** button, a dialog box will pop up.

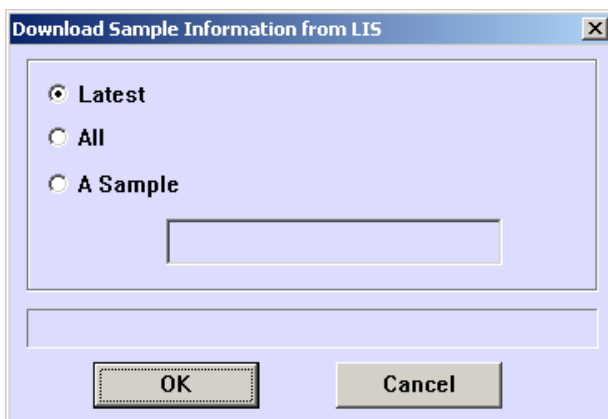


Click the **OK** button if you want to continue.

4.1.5 Download Sample Information

At the **Sample Request** screen, click **Download** to pop up the **Download Sample Information from LIS** dialog box, where you can download sample information from the LIS host, such as sample type, tests and STAT information.

Figure 4-5 Download Sample Information from LIS Dialog Box



The following table explains the parameters of the dialog box.

Parameter	Description
Latest	By selecting Latest , you can download latest sample information of current day from LIS.
All	By selecting All , you can download all sample information of current day from LIS.
A Sample	When selecting A Sample , you should enter the bar code of the sample that you want to download. Then the sample information will be downloaded to the analyzer.

The following table introduces the buttons on the screen.

Button	Function
OK	Click this button to start downloading.
Cancel	Click this button to cancel downloading.

4.2 QC Request

Click the **QC Request** button to enter the **QC Request** screen, as shown in Figure 4-6, where you can request QC runs for desired tests.

Figure 4-6 QC Request Screen

QC Request

Tests

alb

K Na Cl Li

Replicates 1

Select profiles you want to request, or deselect profiles that have been requested

OK Cancel Change Position

Profiles

Controls

Name	Position	Inventory...	Estimated



NOTE

In the **Tests** field, different background colors of the test refer to different meanings:

Blue means the test is selected;

White means the test is selectable;

Gray means the test is unselectable, and if the pointer of the mouse is stopped on it for a while, the system will remind you of the reason why it is unselectable.

Request QC for profiles by using **Profiles**.

The following table explains the parameters on the screen.

Parameter	Description
Replicates	Times of QC requesting. Default setting is 1, which means once only. The maximum is 10.

The following table introduces the buttons on the screen.

Button	Function
OK	After selecting a test(s) in the Tests and setting the Replicates , click this button to finish requesting.
Cancel	After selecting a test(s) in the Tests and setting the Replicates , click this button to cancel requesting.
Change Position	After selecting a control, click this button to pop up the Change Position dialog box, where you can reset the position of the selected control on the sample disk. For more information about the Change Position dialog box, refer to the following text To Reset Position of a Control .

To Reset Position of a Control

At the **QC Request** screen, after selecting a control, click **Change Position** to pop up the **Change Position** dialog box, as shown in Figure 4-7, where you can reset the position of the selected control on the sample disk.

Figure 4-7 Change Position Dialog Box

The following table explains the parameters of the dialog box.

Parameter	Description
Old	Current position of the selected control.
New	New position of the selected control.
Disk	No. of the virtual sample disk. Void means that the selected control is not on the sample disk.
Position	Position on the selected virtual sample disk. Void means that the selected control is not on the sample disk.

The following table introduces the buttons of the dialog box.

Button	Function
Probe Stop	If the system is in testing status, and the control position to be changed or the target position is on the sample disk currently running, you should first stop the probe, the mixing bar and sample/reagent disk. Click this button to stop the probe, the mixing bar and the sample/reagent disk, and the button will change into Resume . After exchanging the positions, click Resume to continue.
OK	After setting a new sample position, click this button to save the setting.
Cancel	After setting a new sample position, click this button to cancel the setting.



CAUTION

Do not put the probe, the mixing bar and the sample/reagent disk on hold for a long time. Otherwise, certain analyses may be affected.

4.3 Start

After requesting, click **Start** to pop up the **Start Testing** dialog box, as shown in Figure 4-8, where you can select the virtual sample disk, virtual reagent disk and samples to be tested.



Caution:

After **Start** is clicked, the system will pop up a dialog box to remind you if the reaction temperature is in normal range. You can proceed to the tests, ignoring the prompt, but the test results may not be reliable. You are recommended to start the tests again only after the reaction temperature becomes normal.

Figure 4-8 Start Testing Dialog Box

The numbers in the **Pending Tests** field refer to “available tests to be run/ number of tests requested” on current sample or reagent disk.

The following table explains the parameters of the dialog box.

Parameter	Description
Sample Disk	Select a sample disk that you want to run tests.
Reagent Disk	Select a reagent disk that you want to run tests.
All	Select All to analyze all samples on the selected sample disk.
From...To...	If you select From...To... , you need to select position No. from the drop-down list boxes, then the reader will analyze the samples you set.

The following table introduces the buttons on the screen.



CAUTION

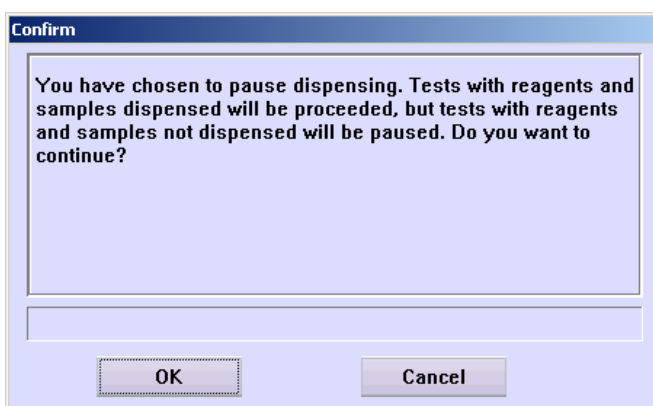
Before clicking **OK**, confirm samples, calibrators, controls and reagents have been placed in correct positions.

Button	Function
OK	After selecting the virtual sample disk, virtual reagent disk and the samples to be tested, click this button to start analysis.
Cancel	After selecting the virtual sample disk, virtual reagent disk and the samples to be tested, click this button to cancel selection and no analysis will be started.

4.4 Probe Stop

When you need to add samples or reagents without stopping current analysis, click **Probe Stop** to pop up the dialog box, as shown in Figure 4-9, where you can pause the probe, the mixing bar and the sample/reagent disk.

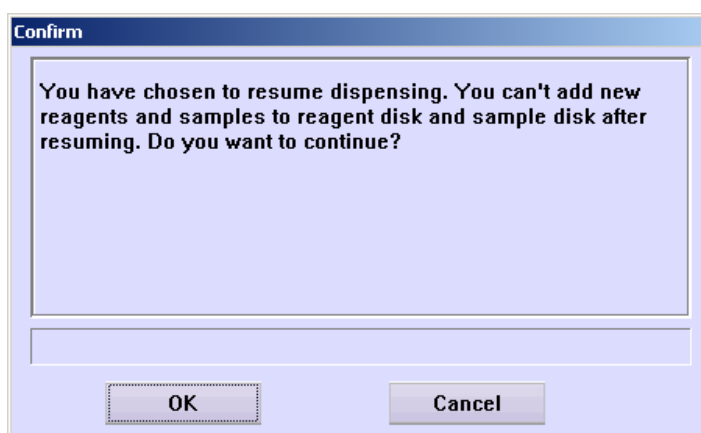
Figure 4-9 Confirm Dialog Box 1



The following table introduces the buttons of the dialog box.

Button	Function
OK	<p>Click this button to pause the sample probe, the mixing bar and the sample/reagent disk. On the reaction disk, the tests that have finished dispensing sample and reagent(s) will continue and the remaining ones will be paused.</p> <p>Then the Probe Stop button changes to Resume, click it to pop up the screen as shown in Figure 4-9. Click OK to resume the sample probe, the mixing bar and the sample/reagent disk, or click Cancel to stay.</p>
Cancel	Click this button to cancel pausing the sample probe, mixing bar and the sample/reagent disk without affecting the analysis.

Figure 4-10 Confirm Dialog Box 2



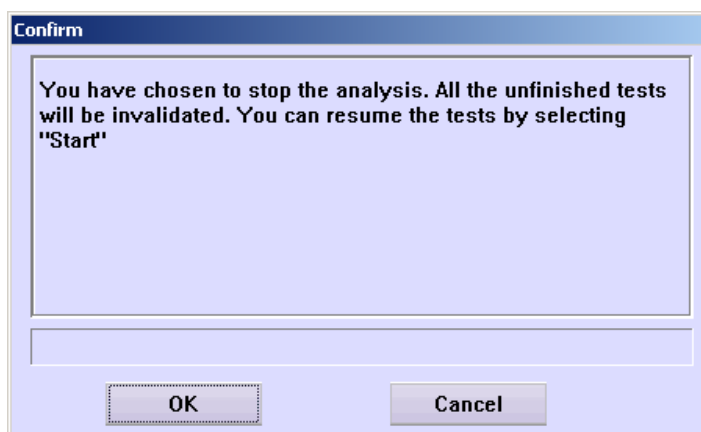
CAUTION

Do not put the probe, the mixing bar and the sample/reagent disk on hold for a long time. Otherwise, certain analyses may be affected.

4.5 Stop

To stop analysis, click **Stop** to pop up the dialog box, as shown in Figure 4-11.

Figure 4-11 Confirm Dialog Box 3



The following table introduces the buttons of the dialog box.

Button	Function
OK	Click this button to stop current analysis.
Cancel	Click this button to cancel stopping.



CAUTION

We recommend this stop function not be used unless it is necessary (for instance the analyzer is experiencing problems).

After the analyzer is stopped, all the tests that have not been finished will be invalidated.

However, you can continue the requested tests that have not been finished by clicking the **Start** button.

4.6 Results

Click **Results** to enter the **Results** screen, where you can view and process current or historical sample results.

The **Results** screen includes two tabs: **Current** and **History**. The former displays the results of current day since the startup, and the latter displays the historical test results before the current day.

On the **Current** and **History** screens, you can view test results by sample or by test.

4.6.1 Current Results

Select **Current** to enter the **Current** screen, as shown in Figure 4-12, where you can view and edit current test results.

Figure 4-12 Current Screen

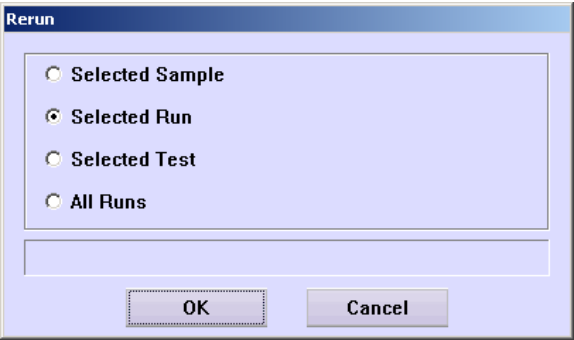
[illegible]

Operations of the **Current** screen are similar to that in **4.6.2 Historical Results**, except that you can only view and process the sample results of current day since powering on and can rerun tests. For other operations, refer to **4.6.2 Historical Results**.

Rerun

At the **Current** screen, after selecting a test and a sample, click **Rerun** to pop up the **Rerun** dialog box, as shown in Figure 4-13, where you can rerun corresponding sample tests of current day since powering on.

Figure 4-13 Rerun Dialog Box



The following table explains the parameters of the dialog box.

Parameter	Description
Selected Sample	Rerun all sample tests of the selected sample that have been finished or have no results.
Selected Run	Rerun the selected test for the selected sample only. It's only available for the test that has been finished or has no result.
Selected Test	Rerun the selected test for all samples that have been finished or have no results.
All Runs	Rerun all the sample tests that have been finished or have no results.

The following table introduces the buttons of the dialog box.

Button	Function
OK	Click this button to pop up the following dialog box.

Confirm

You have chosen to rerun the test. All the existing test results will be invalidated. Please check the positions and remaining volumes of related reagents, samples, calibrators, and controls. Do you want to continue?

OK Cancel

In this dialog box, click **OK** to rerun the selected test(s), or click **Cancel** to abort rerunning.

Cancel	Click this button to cancel rerunning.
--------	--

4.6.2 Historical Results

Click **History** to enter the **History** screen, as shown in Figure 4-14, where you can view and edit historical test results.

Figure 4-14 Results Screen

Current **History**

View Results
☒ By Sample ☐ By Test

Sa...	Po...	Type	STAT	Name	Ge...	Request D...
3	2-S4	Se...	N			6/19/2007...
2	2-S3	Se...	N			6/19/2007...
1	2-S2	Se...	N			6/19/2007...
5	2-S4	Se...	N			6/15/2007...
4	2-S3	Se...	N			6/15/2007...
3	2-S2	Se...	N			6/15/2007...
1	2-S1	Se...	N			6/13/2007...
8	4-S2	Se...	N			6/12/2007...
7	4-S1	Se...	N			6/12/2007...
6	3-S2	Se...	N			6/12/2007...
5	3-S1	Se...	N			6/12/2007...
4	2-S2	Se...	N			6/12/2007...
3	2-S1	Se...	N			6/12/2007...
2	1-S2	Se...	N			6/12/2007...
1	1-S1	Se...	N			6/12/2007...
32	6-S2	Se...	N			6/11/2007...
31	6-S1	Se...	N			6/11/2007...
30	6-S7	Se...	N			6/11/2007...
29	6-S6	Se...	N			6/11/2007...
28	6-S5	Se...	N			6/11/2007...

Test	Re...	Status	Conc...	Ref. Ra...	Output
T...		Pen...			N N
GLU		Pen...			N N
U...		Pen...			N N

Date/Time: 6/1/2007 - 6/19/2007

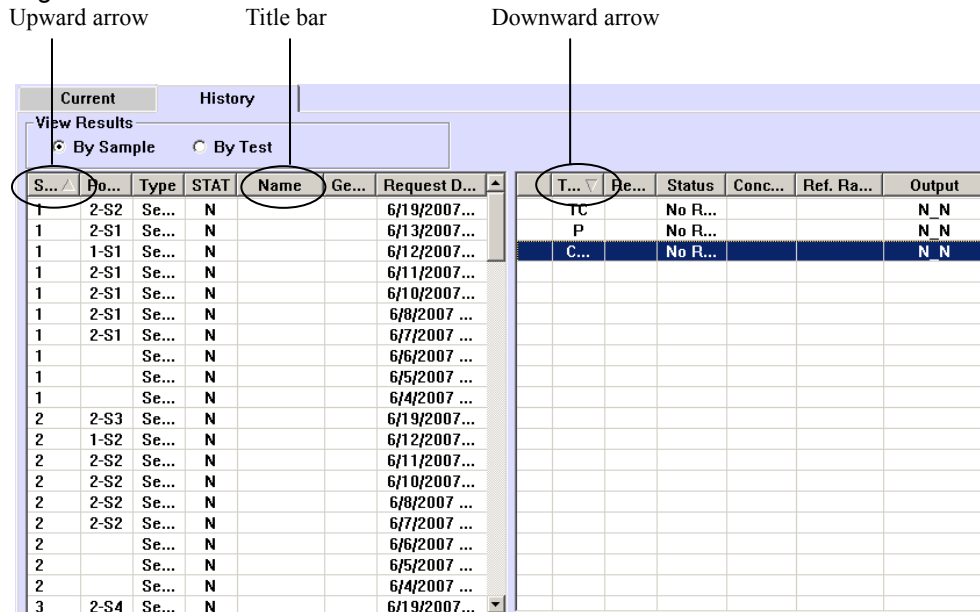
Search Add Details Compens. Edit Reac. Curve Delete Default Print Trend Curve Send

At the **History** screen, (**View Results**) **By Sample** refers to displaying the results by sample; (**View Results**) **By Test** refers to displaying the results by test.

After clicking a title bar, an upward arrow or downward arrow will appear which means the current results are arranged according to the ascendent or descendent order of the selected title bar. See the figure below. The upward arrow means

ascendant ordering and the downward arrow means descendent ordering. The results can be ordered by any title bar at the **History** screen.

Figure 4-15 Title Bar and Arrows



The following table introduces the buttons on the screen.

Button	Function
Search	<p>Click this button to pop up the Conditions dialog box, where you can set the searching conditions.</p> <p>For more information about the Conditions dialog box, refer to Conditions in this section.</p>
Add	<p>Click this button to pop up the Add Off-system Tests dialog box, where you can add off-system test results to samples.</p> <p>For more information about the Add Off-system Tests dialog box, refer to Add Off-system Test Results in this section.</p>
Details	<p>After selecting a sample, click this button to pop up the Sample Information dialog box, where you can view and edit the information of the selected sample.</p> <p>For more information about the Sample Information dialog box, refer to 4.1.1 Sample Information in this section.</p>
Compen.	<p>This button is only available when you select (View Results) By Test.</p> <p>After selecting a test, click this button to pop up the Compensate Results dialog box, where you can edit (including Linear Transform and Calibration Transform) the searched results of the selected test.</p> <p>For more information about the Compensate Results dialog box, refer to Compensate Results in this section.</p>

Button	Function
Edit	<p>After selecting a test, click this button to pop up the Edit Results dialog box, where you can edit the result of the selected test.</p> <p>For more information about the Edit Results dialog box, refer to Edit Results in this section.</p>
Reac. Curve	<p>After selecting a test, click this button to pop up the Reaction Curve dialog box that displays the reaction curve of the selected test.</p> <p>For more information about the Reaction Curve dialog box, refer to Reaction Curve in this section.</p>
Delete	<p>After selecting a test, click this button to pop up the Delete dialog box, where you can delete relevant results.</p> <p>For more information about the Delete dialog box, refer to Delete Results in this section.</p>
Default	<p>After selecting a test that has replicate or rerun results, click this button to pop up the Set Defaults dialog box, where you can set the selected test result as default to be printed.</p> <p>For more information about the Set Defaults dialog box, refer to Default in this section.</p>
Print	<p>After selecting a test, click this button to pop up the Print dialog box, where you can print relevant results.</p> <p>For more information about the Print dialog box, refer to Print Results in this section.</p>
Trend Curve	<p>This button is only available when you select (View Results) By Test.</p> <p>After selecting a test, click this button to pop up the Result Trend Curve dialog box, where you can view the result trend curve of the selected test.</p> <p>For more information about the Result Trend Curve dialog box, refer to Result Trend Curve in this section.</p>
Send	<p>After selecting a test result, click this button to pop up the Send Test Results dialog box, where you can send test results to LIS host.</p> <p>For more information about the Send Test Results dialog box, refer to Send Results in this section.</p>

4.6.2.1 Conditions

At the **History** screen, click **Search** to pop up the **Conditions** dialog box, as shown in Figure 4-16, where you can enter the conditions to search the results you want.

Figure 4-16 Conditions Dialog Box

The following table explains the parameters of the dialog box.

The parameters of this dialog box constitute the searching conditions. Void means the parameter is exclusive.

Parameter	Description
Date/Time	Select date and time when samples are analyzed. The first drop-down list box is start date and the second is end date.
Sample ID	Enter the No. of samples you want to search. The first edit box is start No. and the second is end No.
Name	Name of the patient.
Gender	Gender of the patient.
STAT	Whether the sample results to be searched are STAT or not.
Test	Name of the test.
Age	Age of the patients. You must select the unit of the age.
MRN	Medical record number of the patient. The first edit box is start No. and the second is end No.

Parameter	Description
Admission No.	Admission No. of the patients. The first edit box is start No. and the second is end No.
Bed No.	Bed No. of the patients. The first edit box is start No. and the second is end No.
Department	The department by which the samples are sent.
Sample Type	The type of the samples.
Zone No.	No. of patient zone where the patient stays.
Bar Code	The barcode information of the sample.
SS No.	Medical insurance No. or social insurance No.

The following table introduces the buttons of the dialog box.

Button	Function
Search	After setting the conditions, click this button, and then the system will search results according to the conditions and display the qualified ones on the History screen.
Cancel	Click this button to exit this dialog box without searching.

4.6.2.2 Add Off-system Test Results

At the **History** screen, click **Add** to pop up the **Add Off-system Tests** dialog box, as shown in Figure 4-17, where you can set off-system test results for samples.



NOTE

The test that is not run on this analyzer is considered as off-system test, which can be printed out in the patient report.

Figure 4-17 Add Off-system Tests Dialog Box

The following table explains the parameters of the dialog box.

Parameter	Description
Test	Name of the off-system test.
Full Name	Full name of the off-system test. It cannot be edited.
Result Type	Property of the off-system test. It cannot be edited.
Unit	Unit of the off-system test result. It cannot be edited. It's only available for quantitative off-system test.
Sample ID	No. of the samples. The first edit box is starting No. and the second is ending No.
Date	The date when the off-system test was run.
Result	Result of the off-system test. For a qualitative test, it is a drop-down list box; for a quantitative test, it is an edit box.



NOTE

If some samples in the range of **Sample ID** either are inexistent or have results of the selected off-system test, the analyzer will ignore these samples and only set results for others in the range of **Sample ID**.

The following table introduces the buttons of the dialog box.

Button	Function
OK	After setting the off-system test result for the selected sample, click this button to save settings.
Cancel	After setting the off-system test result for the selected sample, click this button to cancel settings.
Close	Click this button to exit the Add Off-system Tests dialog box.

4.6.2.3 Compensate Results

At the **History** screen, after selecting (**View Results**) **By Test** and a test, click **Compen.** to pop up the **Compensate Results** dialog box, as shown in Figure 4-18, where you can edit (including Linear Transform and Calibration Transform) the searched sample results of the selected test.



NOTE

Compensation is not available for calculation tests and off-system tests.

If the compensated test is also a part of a calculation test, the analyzer will automatically recalculate the calculation test with the latest test result.

Figure 4-18 Compensate Results Dialog Box

Compensate Results

Test:

☒ **Linear Transform**

Y = X + Save

Note:
Y=aX + b [X-Original concentration, Y-New concentration]

☐ **Calibration Transform**

Rule:

Formula:

Rgt. Blk. K R0 A B C D

Note:
Parameters to be used are shown above. Down Up

Next Previous **OK** Cancel Close

The following table explains the parameters of the dialog box.

Parameter	Description
Test	Name of the test, which means to transform the searched results of this test.
Linear Transform	Select to transform all searched results of the selected test in linear way with the formula $Y=aX+b$. Where, X – The result before being transformed. Y – The result after being transformed. a, b – Coefficients of the linear transform, which can be entered in the edit box.
Calibration Transform	Select to transform all searched results of the selected test through calibration, which means to recalculate the results with the default calibration parameters.
Rule	The calibration rule used to obtain the default calibration parameters.
Formula	The calibration formula used to obtain the default calibration parameters.
Rgt. Blk.	Reagent blank.
K	Parameter K.
R0	Parameter R0.

Parameter	Description
A	Parameter A.
B	Parameter B.
C	Parameter C.
D	Parameter D.

The following table introduces the buttons of the dialog box.

Button	Function
Next	Click this button to view next test.
Previous	Click this button to view previous test.
OK	Click this button to start transforming all searched results of the selected test in linear way or through calibration.
Cancel	Click this button to cancel the linear or calibration transform.
Close	Click this button to close the Compensate Results dialog box.

4.6.2.4 Edit Results

At the **History** screen, after selecting a test that is finished or has no result or selecting an off-system test, click **Edit** to pop up the **Edit Results** dialog box, as shown in Figure 4-19, where you can edit result of the selected test.

Figure 4-19 Edit Results Dialog Box

The following table explains some parameters of the dialog box.

Parameter	Description
Orig. Result	Result of the test calculated by the system. It cannot be edited.
Cur. Result	Default result of the test. If the test has not been edited, the result is the original one; otherwise, the result is the latest one.
Remark	Remarks on the test.
Description	Description of the test result.
History Record	Historical modification record, including time, modifier and results

The following table introduces the buttons of the dialog box.

Button	Function
Add	Click this button to add the selected Description to Remark .
Previous	Click this button to display the previous test result for the current sample.
Next	Click this button to display the next test result for the current sample.
OK	Click this button to save modification to the test result.

Button	Function
Cancel	Click this button to cancel modification to the test result.
Close	Click this button to exit the Edit Results dialog box.

Some measurements or data may influence the test results, though not serious, will disturb your judgment. When printing or searching test results, pay much attention to those ones that are flagged by “!”. The following table describes all flags that are used on the system.

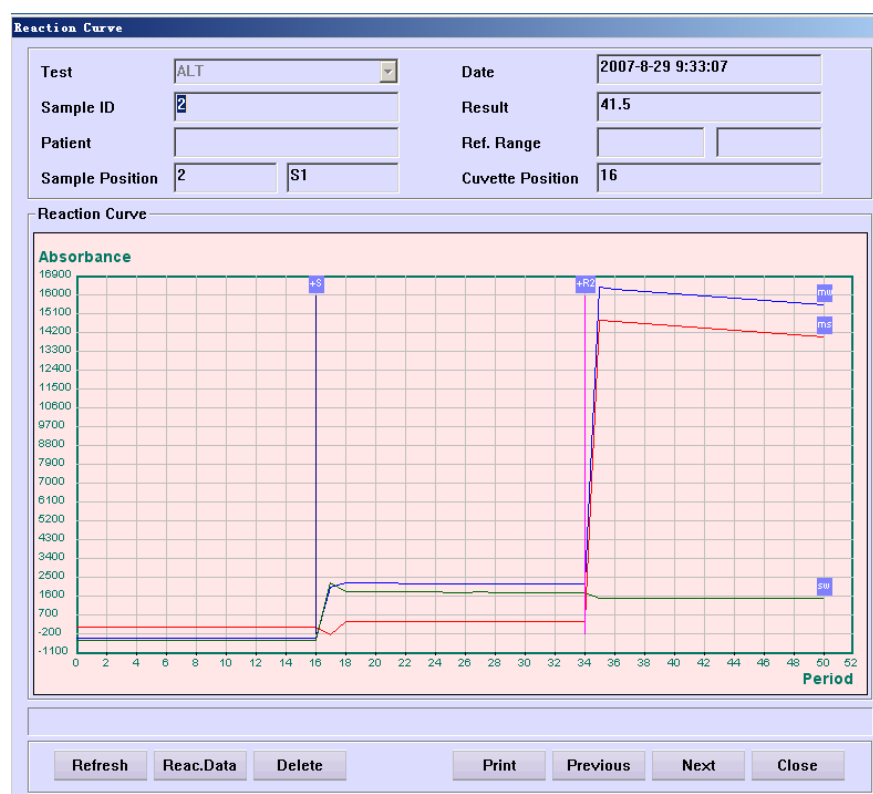
Flag	Description
NBP	No balance point
NLN	No linearity range
LNE	Linearity of reaction curve too low
RCE	Response calculation error
ROL	Response lower than that of weakest calibrator
ROH	Response higher than that of strongest calibrator
LRL	Concentration lower than linearity low limit
LRH	Concentration exceeds linearity high limit
RFL	Concentration too low
RFH	Concentration too high
ABL	Absorbance too low
ABH	Absorbance too high
RBL	Reagent blank too low
RBH	Reagent blank too high
MBL	R2 blank too low
MBH	R2 blank too high
SBL	Sample blank too low
SBH	Sample blank too high
BOE	Substrate depleted
PRO	Prozone check abnormal
COV	Calibration parameter calculation failed
CSD	Calibration SD too high
FAC	Factor difference too high
COL	Correlation coefficient too low
DUP	Incomplete replicate calibration data
MON	Calibration curve not monotonic
CCE	Concentration calculation failed
NID	Incomplete test data
NDP	Incomplete replicate test data
UCL	Out of control

ASD	Sample dispensing delayed
R2D	R2 dispensing delayed
LDD	Photoelectric measurement delayed
EDP	Replicate error too high
BRL	Blank response too low
BRH	Blank response too high
SEN	Calibration sensitivity too low
ICB	Incubation
ETR	Measurement range exceeded
EDT	Result edited
CAL	Result compensated
RCC	Calibration result calculated

4.6.2.5 Reaction Curve

At the **History** screen, after selecting a test, click **Reac. Curve** to pop up the **Reaction Curve** dialog box, as shown in Figure 4-20, where you can view the reaction curve of the test.

Figure 4-20 Reaction Curve Dialog Box



The following table introduces the buttons of the dialog box.

Button	Function
Refresh	Click this button to refresh the current reaction curve.
Reac. Data	Click this button to pop up a dialog box to display the reaction data of current curve.

Click **Print** to print the reaction data.

Perio...	Pri. ...	Pri. Abs.	Sec. ...	Sec. Abs.	Abs. Diff.
0	340nm	0.000000			
1	340nm	0.000000			
2	340nm	0.000000			
3	340nm	0.000000			
4	340nm	0.000000			
5	340nm	0.000000			
6	340nm	0.000000			
7	340nm	0.000000			
8	340nm	0.000000			
9	340nm	0.000000			
10	340nm	0.000000			
11	340nm	0.000000			
12	340nm	0.000000			
13	340nm	0.000000			
14	340nm	0.000000			
15	340nm	0.000000			
16	340nm	0.000000			
17	340nm	0.000000			

Delete Click this button to pop up the dialog box as shown below.

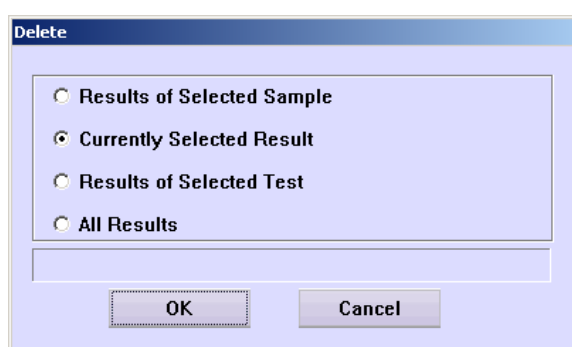
Click **OK** to delete the selected test, click **Cancel** to abort the deletion.

Print	Click this button to print the current reaction curve.
Previous	Click this button to display the reaction curve of the previous test for the current sample.
Next	Click this button to display the reaction curve of the next test for the current sample.
Close	Click this button to close the Reaction Curve dialog box.

4.6.2.6 Delete Results

At the **History** screen, after selecting a sample and a test, click **Delete** to pop up the **Delete** dialog box, as shown in Figure 4-21, where you can delete relevant test results.

Figure 4-21 Delete Dialog Box

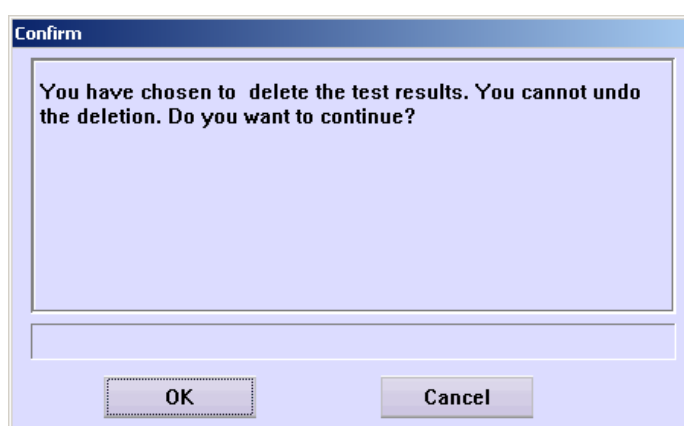


The following table explains the parameters of the dialog box.

Parameter	Description
Results of Selected Sample	Delete all searched results of the selected sample.
Currently Selected Result	Delete the test result currently selected.
Results of Selected Test	Delete all searched results of the selected test.
All Results	Delete all results currently searched.

The following table introduces the buttons of the dialog box.

Button	Function
OK	Click this button to pop up the following dialog box.



Click **OK** to delete the specified result(s); click **Cancel** to abort the deletion.

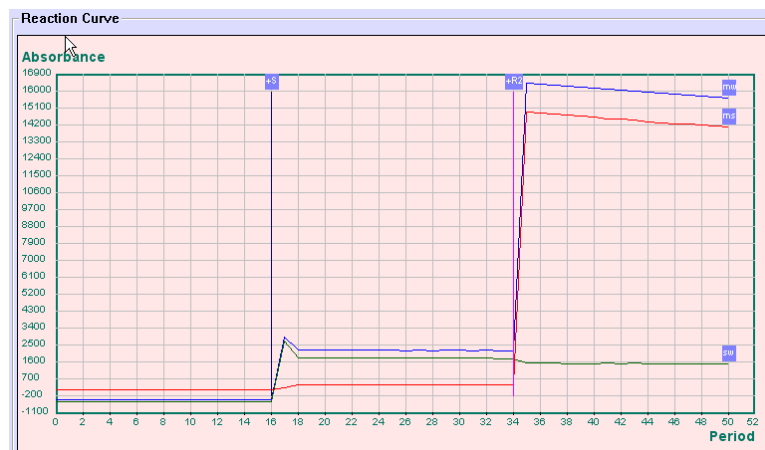
Cancel	Click this button to cancel the deletion.
--------	---

4.6.2.7 Default

At the **History** screen, select a sample that has replicate or rerun results, click **Default** to display the following dialog box.

[illegible]

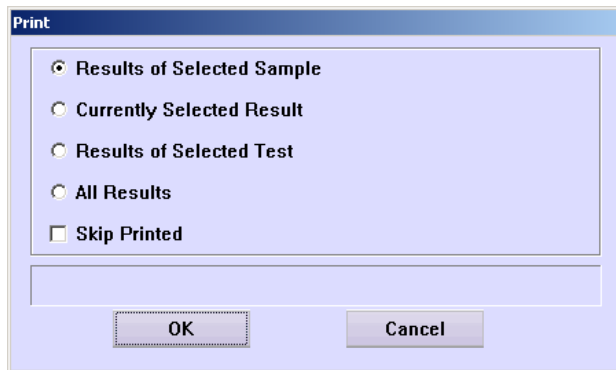
Parameter	Description
Reac. Curve	After selecting a test result, click this button to pop up the Reaction Curve dialog box.



Close Click this button to close the dialog box.

At the **History** screen, after selecting a test, click **Print** to pop up the **Print** dialog box, as shown in Figure 4-23, where you can print relevant results.

Figure 4-23 Print Dialog Box



The following table explains the parameters of the dialog box.

Parameter	Description
Results of Selected Sample	Print all searched results of the selected sample.
Currently Selected Result	Print the test result currently selected.
Results of Selected Test	Print all searched results of the selected test.
All Results	Print all results currently searched.
Skip Printed	Select this checkbox to neglect the results that are already printed.

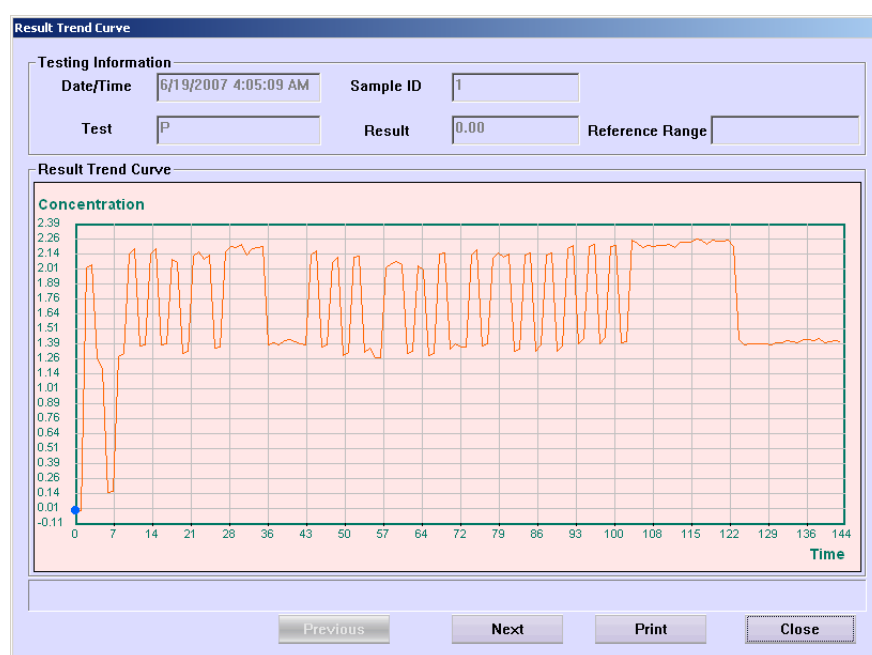
The following table introduces the buttons of the dialog box.

Button	Function
OK	Click this button to print the specified result(s).
Cancel	Click this button to cancel printing.

4.6.2.9 Result Trend Curve

At the **History** screen, after selecting (**View Results**) **By Test** and a test, click the **Trend Curve** button to pop up the **Result Trend Curve**, as shown in Figure 4-24, where you can view the result trend curve of the selected test.

Figure 4-24 Result Trend Curve Screen



The following table explains the parameters of the screen.

Parameter	Description
Date/Time	Request time of the run, It corresponds to the blue point on the result trend curve.
Sample ID	Sample ID of the run. It corresponds to the blue point on the result trend curve.
Test	The test that is corresponding to the result trend curve.
Result	The result of the run that is corresponding to the blue point on the result trend curve.
Reference Range	The reference range of the run that is corresponding to the blue point on the result trend curve.

The following table introduces the buttons of the dialog box.

Button	Function
Previous	Click this button to display the testing information of the previous run, which is corresponding to the blue point on the curve.
Next	Click this button to display the testing information of the next run, which is corresponding to the blue point on the curve.
Print	Click this button to print the current curve.
Close	Click this button to close the Result Trend Curve dialog box.

4.6.2.10 Send Results

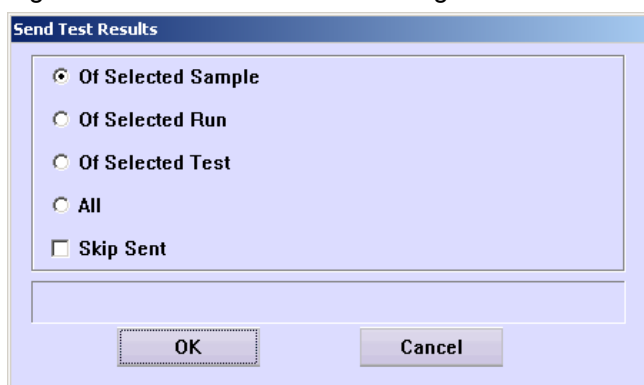
At the **History** screen, after selecting a test, click **Send** to pop up the **Send Test Results** dialog box, as shown in Figure 4-25, where you can send test results to LIS host.



NOTE:

Sending results to LIS host is allowed only when the system is connected to LIS successfully.

Figure 4-25 Send Test Results Dialog Box



The following table explains the parameters on the dialog box.

Parameter	Description
Of Selected Sample	Send all test results of selected sample.
Of Selected Run	Send currently selected test result.
Of Selected Test	Send all sample results of selected test.
All	Send all results searched.
Skip Sent	Select this check box to neglect the results that are already sent to LIS.

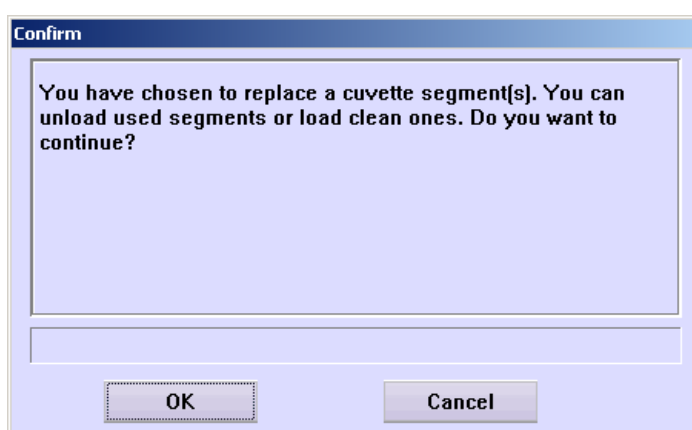
The following table introduces the buttons of the dialog box.

Button	Function
OK	Click this button to send the specified test results to LIS.
Cancel	Click this button to abort the sending operation.

4.7 Replace

To replace the cuvettes, click **Replace** to pop up the dialog box, as shown in Figure 4-26.

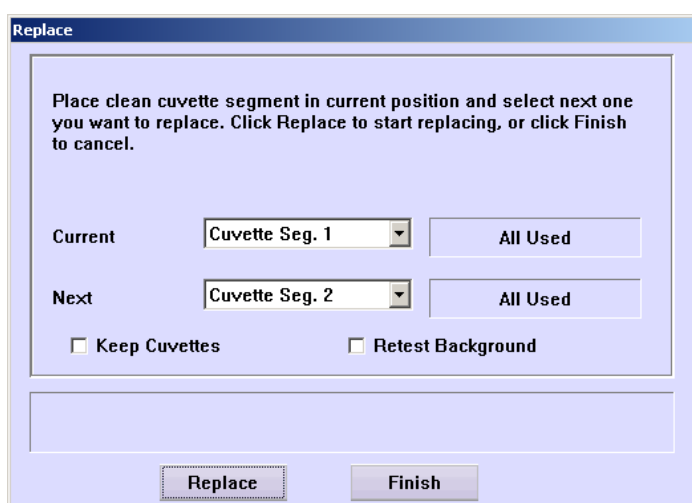
Figure 4-26 Confirm Dialog Box 4



The following table introduces the buttons of the dialog box.

Button	Function
OK	Click this button to pop up the Replace dialog box, as shown in Figure 4-26.
Cancel	Click this button to cancel replacing.

Figure 4-27 Replace Dialog Box



The following table explains the parameters of the dialog box.

Parameter	Description
Current	You can load/unload a cuvette segment at this position on the reaction disk. It cannot be edited.
Next	You will load/unload a cuvette segment at this position on the reaction disk for the next time.
Keep Cuvettes	Select to rotate the reaction disk without loading/unloading the current cuvette segment, and the status of current cuvette segment will not be changed. If this parameter is selected, you have no need to do anything to the current cuvette segment.
Retest Background	Select to re-test the background after unloading the current cuvette segment. Ensure the current cuvette segment has been unloaded before selecting.

The following table introduces the buttons of the dialog box.

Button	Function
Replace	After setting the parameters, if you have selected Keep Cuvettes , click this button to announce the analyzing unit to execute the replacing operation. After setting the parameters, if you have not selected Keep Cuvettes , replace the cuvette segment manually, and then click this button to announce the analyzing unit to execute the replacing operation.
Finish	Click this button to finish replacing.



CAUTION

Ensure to place new cuvettes into the reaction disk when replacing cuvettes.

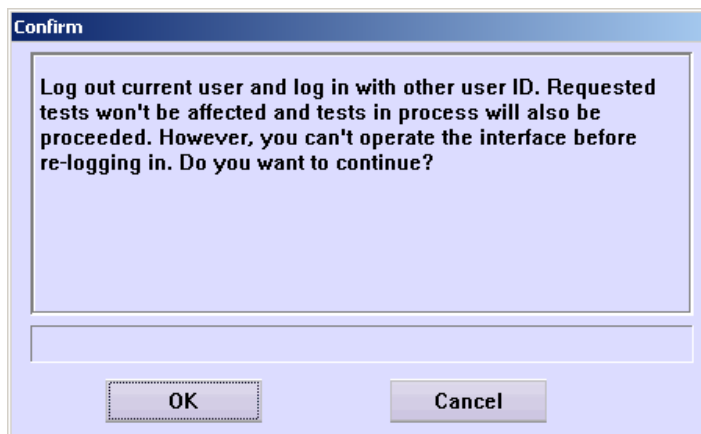
After replacing the cuvettes, be sure to close the small window on the reaction disk; otherwise the reaction temperature may be influenced.

When installing new reaction cuvettes, make sure to place them steadily on the reaction disk.

4.8 Relog

If you need to log on the operating software with other username, click this button to pop up the dialog box, as shown in Figure 4-28.

Figure 4-28 Confirm Dialog Box 5



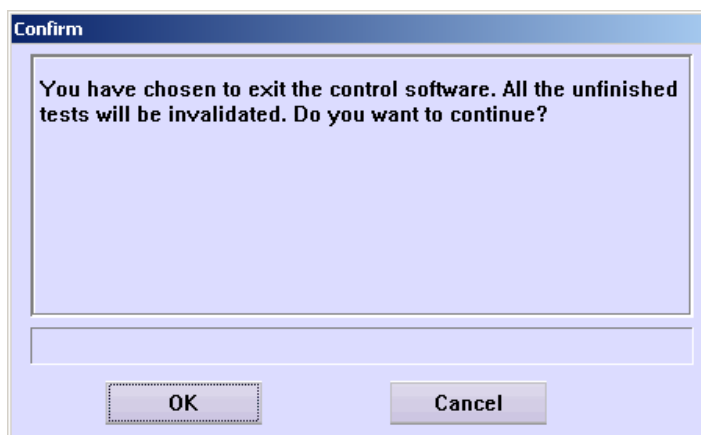
The following table introduces the buttons of the dialog box.

Button	Function
OK	Click this button to pop up the dialog box to enter the username and password, and then you can log on as the user.
Cancel	Click this button to cancel relogging.

4.9 Exit

Click **Exit** to pop up the dialog box, as shown in Figure 4-29.

Figure 4-29 Confirm Dialog Box 6

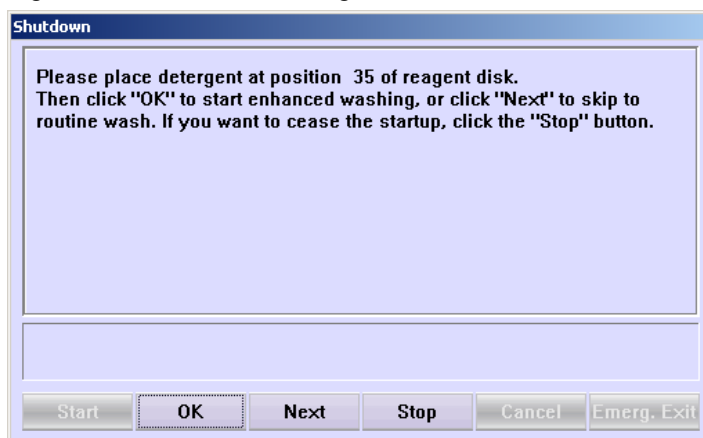


The following table introduces the buttons of the dialog box.

Button	Function
OK	Click this button to prepare for exiting the operating software and pop up the dialog box, as shown in Figure 4-29. Then you can operate according to the dialog box and following ones until exiting the operating software.

Button	Function
Cancel	Click this button to cancel exiting.

Figure 4-30 Shutdown Dialog Box

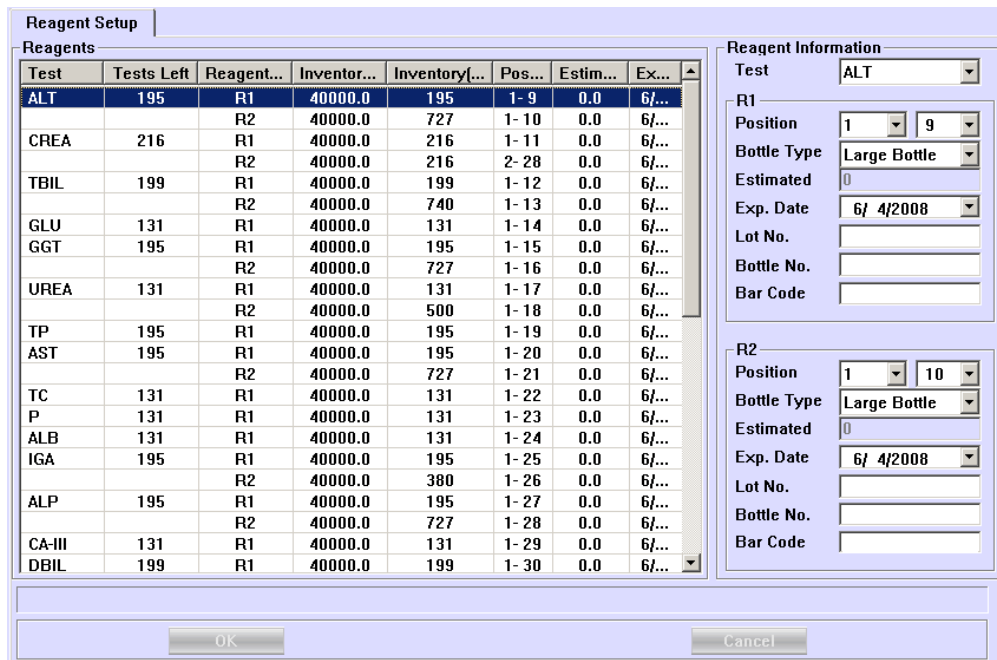


The Shutdown Dialog Box has a title bar labeled "Shutdown". Inside, there is a text area with the following message: "Please place detergent at position 35 of reagent disk. Then click "OK" to start enhanced washing, or click "Next" to skip to routine wash. If you want to cease the startup, click the "Stop" button." Below the text area is a row of buttons: Start, OK, Next, Stop, Cancel, and Emerg. Exit.

4.10 Reagent

Click **Reagent** to enter the **Reagent Setup** screen, as shown in Figure 4-31, where you can edit the reagent information.

Figure 4-31 Reagent Setup Screen



The Reagent Setup screen is divided into two main sections: "Reagents" and "Reagent Information".

Reagents Section: This section contains a table with the following columns: Test, Tests Left, Reagent..., Inventor..., Inventory..., Pos..., Estim..., and Ex... The table lists various reagents and their associated values.

Test	Tests Left	Reagent...	Inventor...	Inventory...	Pos...	Estim...	Ex...
ALT	195	R1	40000.0	195	1- 9	0.0	6/...
		R2	40000.0	727	1- 10	0.0	6/...
CREA	216	R1	40000.0	216	1- 11	0.0	6/...
		R2	40000.0	216	2- 28	0.0	6/...
TBIL	199	R1	40000.0	199	1- 12	0.0	6/...
		R2	40000.0	740	1- 13	0.0	6/...
GLU	131	R1	40000.0	131	1- 14	0.0	6/...
GGT	195	R1	40000.0	195	1- 15	0.0	6/...
		R2	40000.0	727	1- 16	0.0	6/...
UREA	131	R1	40000.0	131	1- 17	0.0	6/...
		R2	40000.0	500	1- 18	0.0	6/...
TP	195	R1	40000.0	195	1- 19	0.0	6/...
AST	195	R1	40000.0	195	1- 20	0.0	6/...
		R2	40000.0	727	1- 21	0.0	6/...
TC	131	R1	40000.0	131	1- 22	0.0	6/...
P	131	R1	40000.0	131	1- 23	0.0	6/...
ALB	131	R1	40000.0	131	1- 24	0.0	6/...
IGA	195	R1	40000.0	195	1- 25	0.0	6/...
		R2	40000.0	380	1- 26	0.0	6/...
ALP	195	R1	40000.0	195	1- 27	0.0	6/...
		R2	40000.0	727	1- 28	0.0	6/...
CA-III	131	R1	40000.0	131	1- 29	0.0	6/...
DBIL	199	R1	40000.0	199	1- 30	0.0	6/...

Reagent Information Section: This section contains fields for reagent information, organized by reagent type (R1 and R2).

R1 Information:

- Test: ALT (dropdown)
- Position: 1 (dropdown) and 9 (dropdown)
- Bottle Type: Large Bottle (dropdown)
- Estimated: 0 (text field)
- Exp. Date: 6/ 4/2008 (dropdown)
- Lot No.: (text field)
- Bottle No.: (text field)
- Bar Code: (text field)

R2 Information:

- Position: 1 (dropdown) and 10 (dropdown)
- Bottle Type: Large Bottle (dropdown)
- Estimated: 0 (text field)
- Exp. Date: 6/ 4/2008 (dropdown)
- Lot No.: (text field)
- Bottle No.: (text field)
- Bar Code: (text field)

At the bottom of the screen are two buttons: OK and Cancel.

The **Reagents** list displays the reagent information of all tests.

The following table explains the parameters on the screen.

Parameter	Description
Test	Select a test to edit the reagent information.
Position	Position of the reagent bottle on the reagent disk. The first drop-down list box is the No. of virtual reagent disk, and the second is the position on the reagent disk.
Bottle Type	Types of reagent bottle include Large bottle and Small bottle.
Estimated	Estimated volume of the reagent to consume. The unit is µl. The volume cannot be edited.
Exp. Date	Expiration date of the reagent.
Lot No.	Lot No. of the reagent.
Bottle No.	Bottle No. of the reagent.
Bar Code	Bar code of the reagent.

The following table introduces the buttons on the screen.

Button	Function
OK	Click this button to save the reagent information set for the selected test.
Cancel	Click this button to cancel the reagent information set for the selected test.

4.11 Calibration

Click **Calibration** to enter the screen, where you can request calibration, view calibration results and set calibrator information.

The following sections introduce the **Calibration** screen by tab.

4.11.1 Calibration Request

The **Calibration Request** screen, as shown in Figure 4-32, is where you can request calibration.

[illegible]

The reagent blank is vital to obtaining correct analysis results. The blank results can assist in determining whether the reagents have expired, or whether the reaction background should be deducted, and in eliminating the absorbance changes caused by the reagents themselves. We recommend the reagent blank be run on a daily base.

NOTE

Gray means the test is unselectable, and if the pointer of the mouse is stopped on it for a while, the system will remind you of the reason why it is unselectable.

The following table introduces the buttons on the **Calibration Request** screen.

Button	Function
OK	After selecting calibration tests, click this button to finish requesting. Refer to the following text To Request Calibration for specific operations.
Cancel	After selecting calibration tests, click this button to cancel requesting. Refer to the following text To Request Calibration for specific operations.
Change Position	After selecting a calibrator in the Calibrator area, click this button to pop up the Change Position dialog box. For more information about the Change Position dialog box, refer to the following text To Reset Position of a Calibrator .

To Request Calibration

- Select a type in the **Request Type** area.
Where,
Calibration refers to running calibration directly without testing the reagent blank;
Rgt. Blk refers to testing the reagent blank only.
Calib.+Rgt. Blk. refers to testing the reagent blank and then calibrating.
- Select a test(s) in the **Tests** list.
- If you confirm to calibrate the selected tests, click **OK**.

To Reset Position of a Calibrator

At the **Calibration Request** screen, after selecting a calibrator, click **Change Position** to pop up the **Change Position** dialog box, as shown in Figure 4-33, where you can reset position of the selected calibrator on the sample disk.

Figure 4-33 Change Position Dialog Box

The screenshot shows a 'Change Position' dialog box with a light blue background. It features two rows of controls. The first row, labeled 'Old', has a 'Disk' dropdown menu with '9' selected and a 'Position' dropdown menu with 'S1' selected. Below these is a 'Changeable' button. The second row, labeled 'New', also has a 'Disk' dropdown menu with '9' selected and a 'Position' dropdown menu with 'S1' selected, followed by another 'Changeable' button. At the bottom of the dialog, there are three buttons: 'Probe Stop', 'OK', and 'Cancel'.

The following table explains the parameters of the dialog box.

Parameter	Description
Old	Current position of the selected calibrator on the sample disk.
New	New position of the selected calibrator on the sample disk.
Disk	No. of virtual sample disk. Void means that the selected calibrator is not on the sample disk.
Position	Position of the calibrator on the selected virtual sample disk. Void means that the selected calibrator is not on the sample disk.

The following table introduces the buttons of the dialog box.

Button	Function
Probe Stop	If the system is in testing status, and the calibrator position to be changed or the target position is on the sample disk currently running, you should first stop the probe, the mixing bar and the sample/reagent disk. Click this button to stop the probe, the mixing bar, the sample/reagent disk, and the button will change into Resume . After exchanging the positions, click Resume to continue.
OK	Click this button to save the new position you have set.
Cancel	Click this button to cancel the new position you have set.



CAUTION

Do not put the probe, the mixing bar and the sample/reagent disk on hold for a long time. Otherwise, certain analyses may be affected.

4.11.2 Results

The **Results** screen, as shown in Figure 4-34, is where you can view the calibration results.

Figure 4-34 Results Screen

Calibration Request

Results

Calibrator

ISE

View

☒ Current
 ☐ History
 Test

Test	Rule	Status	Rgt. Blank	K	R0	A	B	C	D
ALT	Two-point...	Finished	14853.4...			4.13783	0.00000		
AST	Two-point...	Finished	15067.4...			4.16110	0.00000		
CK	Two-point...	Finished	1413.42...			1.22434	0.00000		
a-AMY	Two-point...	Finished	1585.89...			1.12982	0.00000		
UREA	Two-point...	Finished	15260.6...			39.44238	0.00000		
CREA	Two-point...	Finished	701.078...			1.54284	0.00000		
TP	Two-point...	Finished	-2525.4...			56.96088	-2.29102		
Alb	Two-point...	Finished	-4235.5...			170.516...	33.42165		
T-Bil	Two-point...	Finished	86.25853			14.16662	0.00000		
HDL-C	Two-point...	Finished	-4.58495			645.188...	0.00000		
ALT630	Two-point...	Finished	15060.9...			4.19376	0.00000		
Apo-A1	Two-point...	Invalid							
CK1	Two-point...	Invalid							
UREA1	Two-point...	Invalid							

Default calibration parameters of all tests

Calib. Curve

Reac. Curve

Rgt. Blk.

Data

Print

Default

Delete

Rerun

In the **View** area, **Current** refers to the default calibration parameters of each test, and **History** refers to all calibration results. The **Test** drop-down list box is only available when **History** is selected.



NOTE

This analyzer uses the default calibration parameters to calculate the sample concentrations.

This analyzer will automatically set the latest parameters (including the parameters obtained through calibration run, editing, calculation) as the default.

The middle of the screen displays the tests, status and calibration parameters, etc. An “!” showed on the left of the test name means that after you click the **Data** button there is remark in the dialog box popped up.

The following table introduces the buttons on the screen.

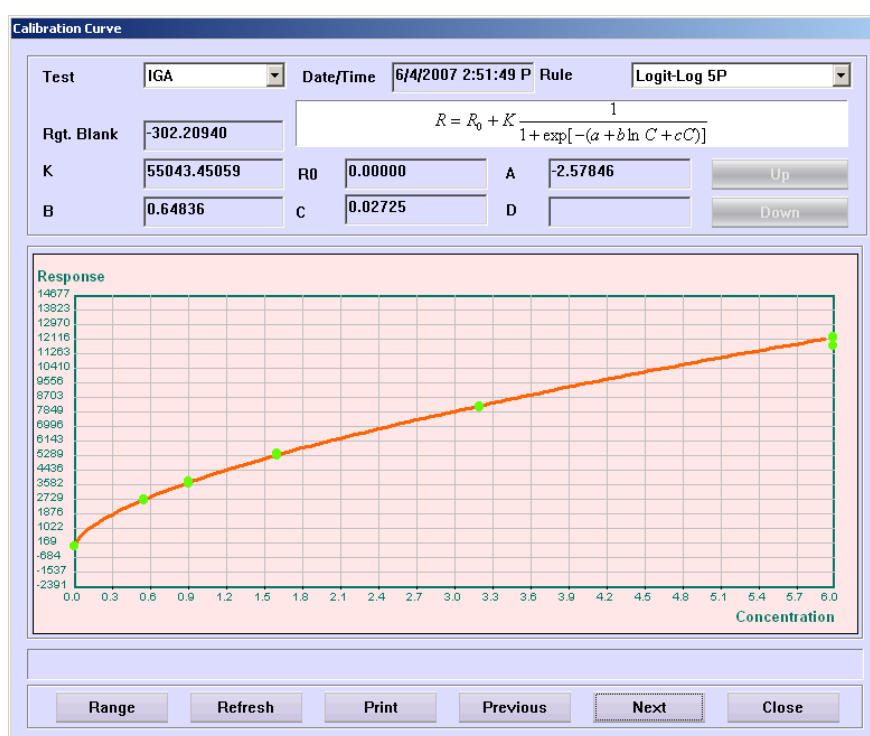
Button	Function
Calib. Curve	Click this button to pop up the Calibration Curve dialog box, where you can view a calibration curve. For more information about the Calibration Curve dialog box, refer to the following text Calibration Curve .
Reac. Curve	Click this button to pop up the Calibration Reaction Curve dialog box, where you can view a reaction curve. For more information about the Calibration Reaction Curve dialog box, refer to the following text Calibration Reaction Curve .

Button	Function
Rgt. Blk.	<p>After selecting a result, click this button to pop up the Reagent Blank Trend Curve dialog box, where you can view the reagent blank curve for the selected result.</p> <p>For more information about the Reagent Blank Trend Curve dialog box, refer to the following text Reagent Blank Trend Curve.</p>
Data	<p>After selecting a result, click this button to pop up the Calibration Data dialog box, where you can view all the calibration data of the selected result.</p> <p>For more information about the Calibration Data dialog box, refer to the following text Calibration Data.</p>
Print	Click this button to print the list in the middle of the Results screen.
Default	<p>This button is available only when History is selected in the View area.</p> <p>Click this button to set the selected calibration result as the default calibration parameters of this test.</p>
Delete	<p>After selecting a calibration result, click this button to pop up the following dialog box.</p> <div> </div> <p>Click OK to delete the selected calibration result or click Cancel to abort the deletion.</p>
Rerun	<p>This button is available only when Current is selected in the View area.</p> <p>After selecting a calibration result, click this button to rerun calibration for the test and the current result is saved.</p>

Calibration Curve

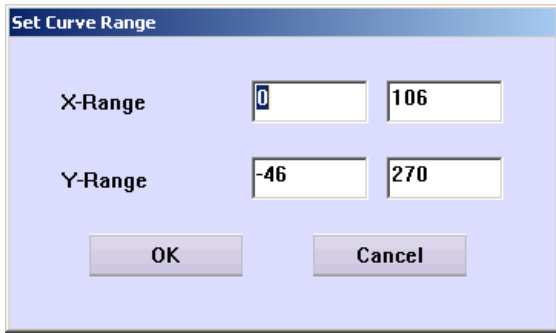
At the **Results** screen, click **Calib. Curve** to pop up the **Calibration Curve** dialog box, as shown in Figure 4-35, which is used to display a calibration curve.

Figure 4-35 Calibration Curve Dialog Box



In the **Calibration Curve** dialog box, select a test in the **Test** drop-down list box to view its calibration curve.

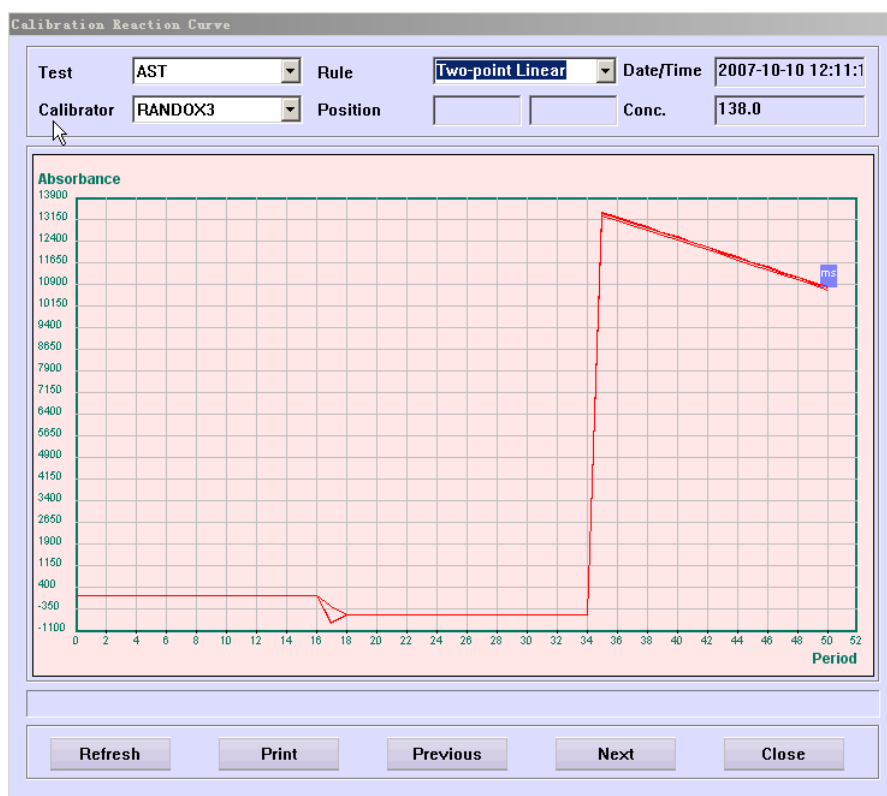
The following table introduces the buttons of the dialog box.

Button	Function
Range	Click this button to pop up the following dialog box, where you can set the X/Y-coordinate ranges of the current calibration curve.
	
Refresh	Click this button to refresh the current calibration curve.
Print	Click this button to print the current calibration curve.
Previous	Click this button to display the calibration curve of the previous result.
Next	Click this button to display the calibration curve of the next result.
Close	Click this button to close the Calibration Curve dialog box.

Calibration Reaction Curve

At the **Results** screen, click **Reac. Curve** to pop up the **Calibration Reaction Curve** dialog box, as shown in Figure 4-36, which is used to display a calibration reaction curve.

Figure 4-36 Calibration Reaction Curve Dialog Box



In the **Calibration Reaction Curve** dialog box, after selecting a test in the **Test** drop-down list box and a calibrator in the **Calibrator** drop-down list box, you can view the reaction curve of the selected test with the selected calibrator.

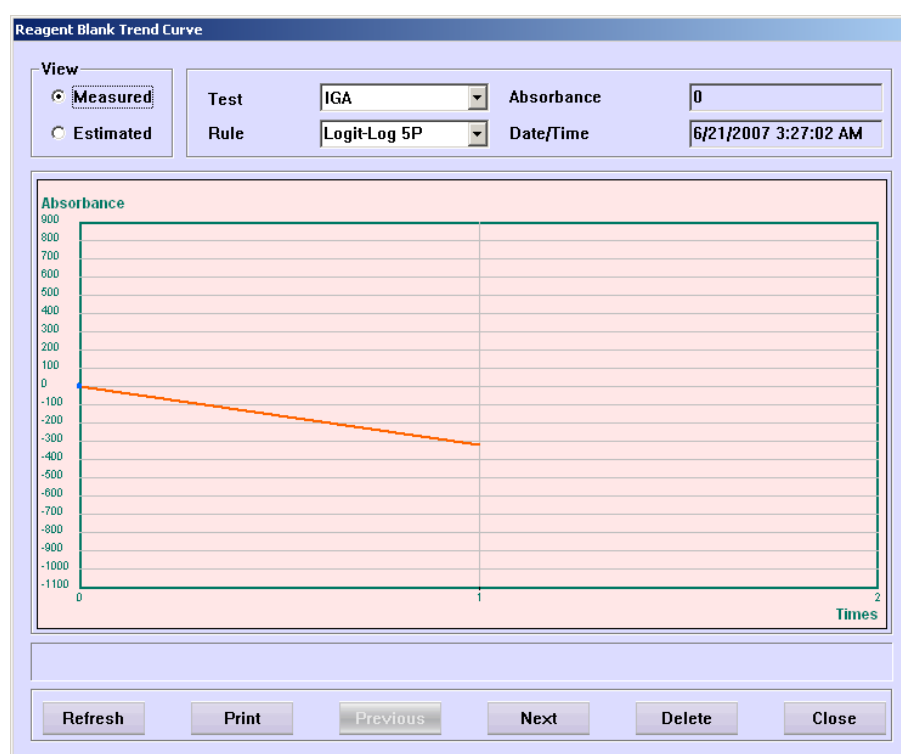
The following table introduces the buttons of the dialog box.

Button	Function
Refresh	Click this button to refresh the current reaction curve.
Print	Click this button to print the current reaction curve.
Previous	Click this button to display the reaction curve of current test with the previous calibrator.
Next	Click this button to display the reaction curve of current test with the next calibrator.
Close	Click this button to close the Calibration Reaction Curve dialog box.

Reagent Blank Trend Curve

At the **Results** screen, click **Rgt. Blk.** to pop up the **Reagent Blank Trend Curve** dialog box, as shown in Figure 4-37, which is used to display the reagent blank trend curve of the selected calibration result.

Figure 4-37 Reagent Blank Trend Curve Dialog Box

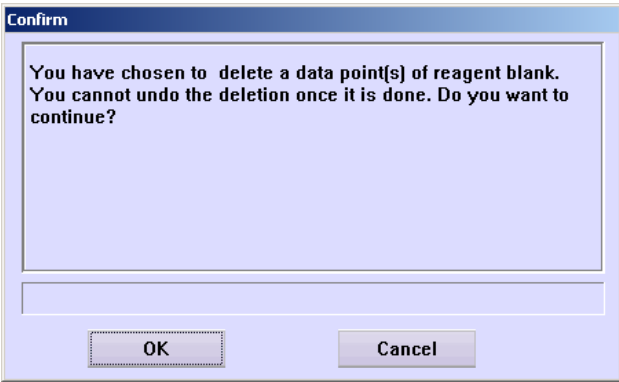


The following table explains some parameters of the dialog box.

Parameter	Description
View	There are two options as Measured and Estimated . The former refers to displaying the measured values and the latter refers to displaying the estimated values.

The following table introduces the buttons of the dialog box.

Button	Function
Refresh	Click this button to refresh the current reagent blank trend curve.
Print	Click this button to print the current reagent blank trend curve.
Previous	Click this button to display the reagent blank value of previous point.
Next	Click this button to display the reagent blank value of next point.

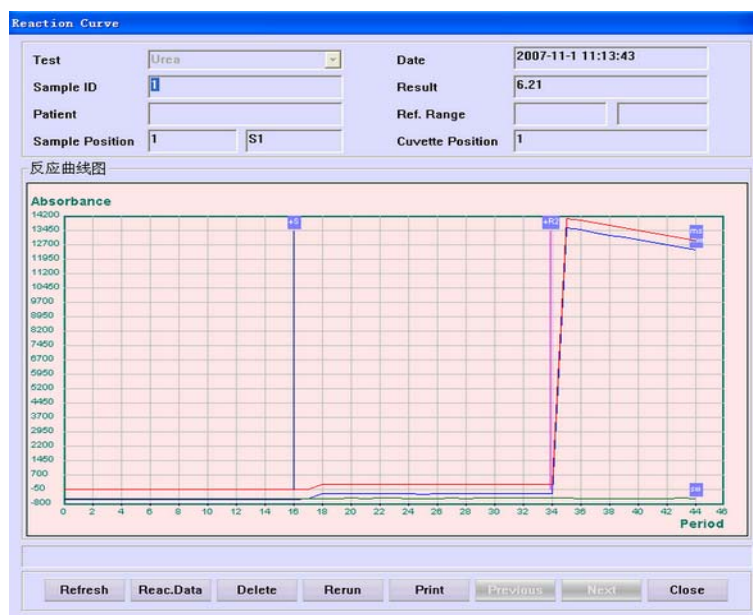
Button	Function
Delete	Click this button to pop up the following dialog box.
	
Close	Click this button to close the Reagent Blank Trend Curve dialog box.

Calibration Data

Figure 4-38 Calibration Data Dialog Box

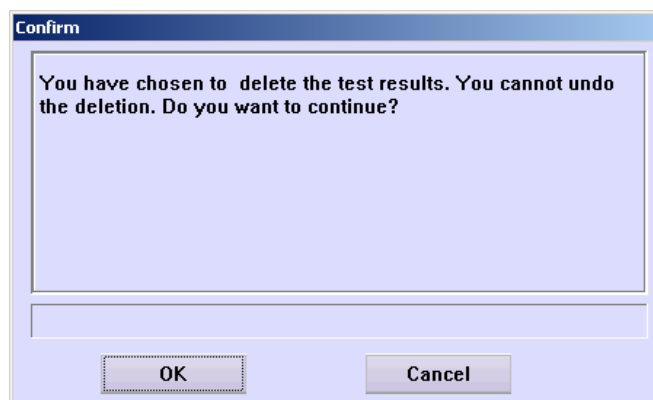
The following table introduces the buttons of the dialog box.

Button	Function
Reac. Curve	Click this button to pop up the Reaction Curve dialog box as shown below.



In the **Reaction Curve** dialog box, click **Previous** or **Next** to display the previous or the next reaction curve; click **Reac. Data** to pop up a dialog box to display the reaction data of the curve; click **Print** to print current reaction curve; click **Close** to close the **Reaction Curve** dialog box.

Delete	After selecting a calibrator, click this button to pop up the following dialog box.
--------	---



Click **OK** to delete the selected test data; click **Cancel** to abort the deletion.

Rerun	Click this button to rerun the calibration test. This button is only available for the calibration runs of current day since powering on which have been finished or have no results. Current calibration test data will be deleted.
Change	Click this button to enable recalculating or modifying calibration parameters.

Button	Function
Recalculate	After clicking the Change button and selecting the calibrator and calibration rule, click this button to recalculate the parameters with the new calibration rule. You can modify the calibration parameters directly only after you have recalculated them successfully.
OK	After successful recalculation or calibration parameters modification, click this button to save the change. Refer to the following text To Recalculate or Modify Calibration Parameters for details.
Cancel	After successful recalculation or calibration parameters modification, click this button to abort the change. Refer to the following text To Recalculate or Modify Calibration Parameters for details.
Close	Click this button to close the Calibration Data dialog box.

To Recalculate or Modify Calibration Parameters

- 1 Click the **Change** button.
- 2 Select a rule in the **Rule** drop-down list box.
- 3 Select test data according to the selected rule.
- 4 Click **Recalculate** to recalculate the calibration parameters with selected rule and calibrators.
- 5 If you do not want to modify the calibration parameters after recalculating, go to step 7;
Otherwise, go directly to the next step.
- 6 Modify the parameters in the **Parameters** area.
- 7 Click **OK** to save the change; or click **Cancel** to ignore the change.

4.11.3 Calibrator

The **Calibrator** screen, as shown in Figure 4-39, is where you can set the basic information and concentration of calibrators.

Figure 4-39 Calibrator Screen

Calibration Request		Results		Calibrator		ISE																																																																																																																			
<div> <div> Calibrators <table border="1"> <thead> <tr> <th>Name</th> <th>Lot No.</th> <th>Position</th> <th>Exp. Date</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>calibrat...</td> <td>1111111</td> <td></td> <td>2009-04...</td> <td>Medium</td> </tr> <tr> <td>calibrat...</td> <td>222</td> <td></td> <td>2009-04...</td> <td>Medium</td> </tr> <tr> <td>calibrat...</td> <td>333</td> <td></td> <td>2009-04...</td> <td>Medium</td> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table> </div> <div> Tests <table border="1"> <thead> <tr> <th>Test</th> <th>Concentration</th> </tr> </thead> <tbody> <tr><td>ALB</td><td></td></tr> <tr><td>ACP</td><td></td></tr> <tr><td>ALP</td><td></td></tr> <tr><td>ALT</td><td></td></tr> <tr><td>AMY</td><td></td></tr> <tr><td>AST</td><td></td></tr> <tr><td>DBIL</td><td></td></tr> <tr><td>TBIL</td><td></td></tr> <tr><td>BUN</td><td></td></tr> <tr><td>Ca-O</td><td></td></tr> <tr><td>Ca-A</td><td></td></tr> <tr><td>CO2</td><td></td></tr> <tr><td>Chol</td><td></td></tr> <tr><td>Creat</td><td></td></tr> <tr><td>CK</td><td></td></tr> <tr><td>CK-MB</td><td></td></tr> <tr><td>CRP</td><td></td></tr> <tr><td>FRUC</td><td></td></tr> <tr><td>GGT</td><td></td></tr> <tr><td>GLUK</td><td></td></tr> <tr><td>Conc.</td><td></td></tr> </tbody> </table> </div> </div>								Name	Lot No.	Position	Exp. Date	Level	calibrat...	1111111		2009-04...	Medium	calibrat...	222		2009-04...	Medium	calibrat...	333		2009-04...	Medium																																																			Test	Concentration	ALB		ACP		ALP		ALT		AMY		AST		DBIL		TBIL		BUN		Ca-O		Ca-A		CO2		Chol		Creat		CK		CK-MB		CRP		FRUC		GGT		GLUK		Conc.	
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<div> <div>Add</div> <div>Delete</div> <div>OK</div> <div>Cancel</div> </div>																																																																																																																									

The following table explains the parameters on the screen.

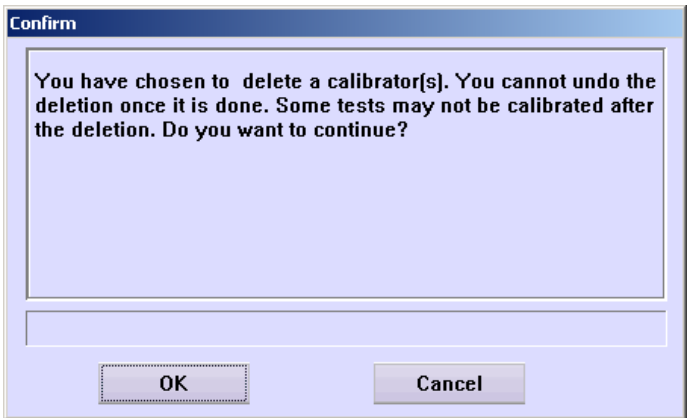
Parameter	Description
Name	Name of the calibrator.
No.	No. of the calibrator
Lot No.	Lot No. of the calibrator.
Exp. Date	The calibrator is effective before this date.
Level	Concentration level of the calibrator. It includes High, Medium and Low.
Position	Position of the calibrator on the sample disk. The first drop-down list box is the No. of virtual sample disk, and the second is the position on the sample disk.
Conc.	It refers to concentration of the selected calibrator for the selected test.



NOTE

Ensure the right expiration date is set so that the analyzer can correctly judge whether the calibrator has expired.

The following table introduces the buttons on the screen.

Button	Function
Add	Click this button to add new calibrators to the Calibrators list.
Delete	After selecting a calibrator in the Calibrators list, click this button to pop up the following dialog box.
	
OK	Click OK to delete the selected calibrator; click Cancel to abort the deletion.
Cancel	Click this button to save modification to calibrator information. Refer to the following text To Modify Calibrator Information for detailed operations.
	Click this button to cancel modification to calibrator information. Refer to the following text To Modify Calibrator Information for detailed operations.

To Modify Calibrator Information

- 1 Select a calibrator in the **Calibrators** list.
- 2 If you don't need to modify the basic information of the selected calibrator, proceed to the next step.
Otherwise, modify the basic information in the **Calibrator Information** area.
- 3 If you don't need to modify the concentration of the selected calibrator, proceed to the next step.
Otherwise, after selecting a test in the **Tests** list, enter concentration in the **Conc.** edit box.
- 4 If you want to save the modification, click **OK**.

4.11.4 ISE

The **ISE** screen, as shown in Figure 4-40 is where you can view ISE calibration results.

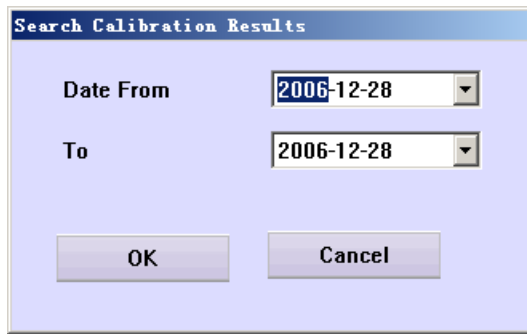
[illegible]

Parameter	Description
View Latest	By selecting View Latest , you can view all ISE calibration results of current day.
Search History	By selecting Search History , you can search historical calibration results of ISE analytes before the current day.

Button	Function
Refresh	When more ISE calibrations are run, you can click this button to refresh and display the latest calibration results.
Search	Click this button to pop up the Search Calibration Results dialog box, where you can set conditions and search the qualified results. For more information about the Search Calibration Results dialog box, refer to the following text Search ISE Calibration Results .
Print	Click this button to print all calibration results in the result list.
Delete	Click this button to delete the selected calibration result.

At the **ISE** screen, click **Search** to pop up the **Search Calibration Results** dialog box, as shown in Figure 4-41, where you can search the ISE calibration results that meet the conditions.

Figure 4-41 Search Calibration Results Dialog Box

A screenshot of a dialog box titled "Search Calibration Results". It has a light blue background. At the top, the title "Search Calibration Results" is in a blue bar. Below the title, there are two date selection fields. The first field is labeled "Date From" and has a dropdown menu showing "2006-12-28". The second field is labeled "To" and also has a dropdown menu showing "2006-12-28". At the bottom of the dialog box, there are two buttons: "OK" and "Cancel".

The following table explains the parameters of the dialog box.

Parameter	Description
Date From	Start date of ISE calibrations that you want to search.
To	End date of ISE calibrations that you want to search.

The following table introduces the buttons of the dialog box.

Button	Function
OK	Click this button to search for calibration runs that meet the conditions you have set.
Cancel	Click this button to cancel searching.

4.12QC

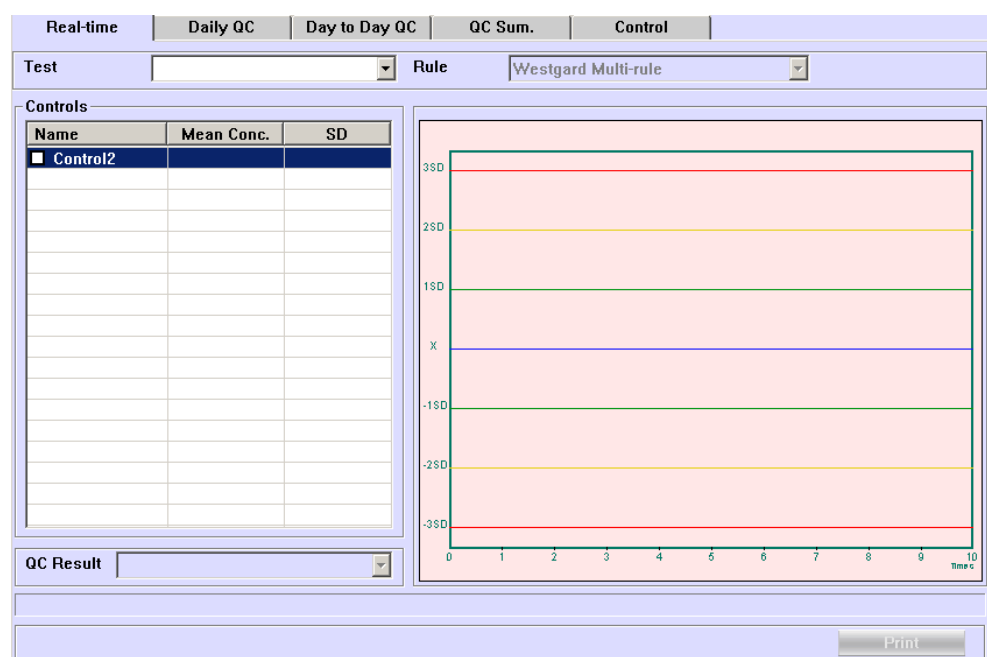
Click **QC** to enter the screen, which is used to display results of real-time QC, daily QC and day-to-day QC and set controls.

The following sections introduce the **QC** screen by tab.

4.12.1 Real-time QC

The **Real-time QC** screen, as shown in Figure 4-42, is used to display the Westgard Multi-rule QC graph for the recent 10 QCs of the current day.

Figure 4-42 Real-time QC Screen



The following table explains the parameters on the screen.

Parameter	Description
Test	Select the test you need to view.
Rule	It refers to the Westgard Multi-rule and cannot be edited.
Controls	It displays the calibrators, concentration levels and SDs of the selected test.
QC Result	It displays the QC result of the selected test.

The following table introduces the button on the screen.

Button	Function
Print	Click this button to print the real-time QC plot currently displayed.

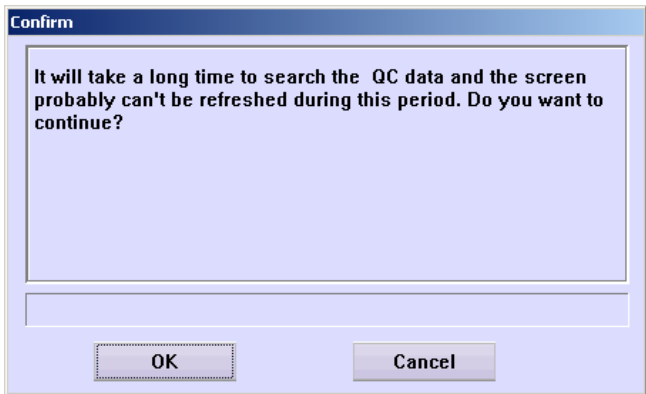
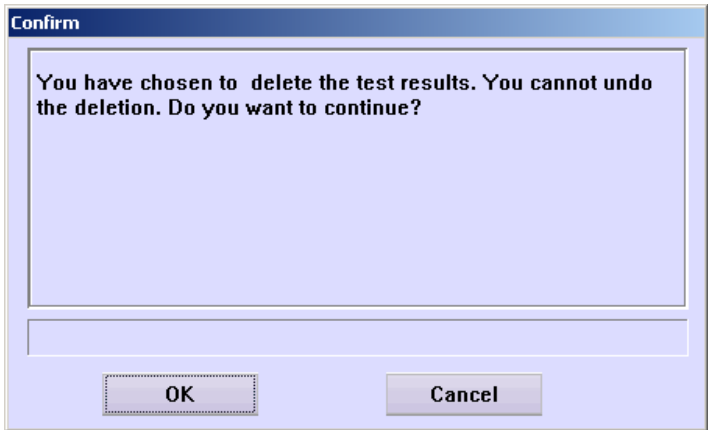
4.12.2 Daily QC

The **Daily QC** screen, as shown in Figure 4-43, is used to display the QC results of the selected test within one day.

[illegible]

Parameter	Description
Tabular Data	Select to display QC data on the screen.
Graphical Data	Select to display QC graph on the screen.
Test	Select the test you need to view.
Date	Select the testing date of the QC results that you need to view.
Rule	It includes Westgard multi-rule, Cumulative Sum Check and TWIN-PLO rule.
Control 1	Select the first control.
Control 2	Select the second control

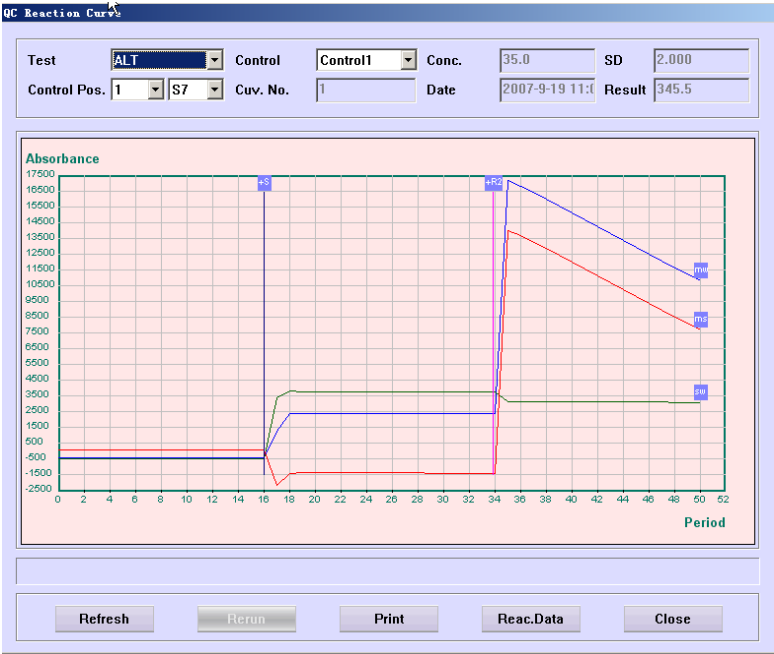
The following table introduces the buttons on the screen.

Button	Function
Refresh	<p>After setting or changing searching conditions, the system will not refresh the searching results automatically. You need to click this button to refresh and display the latest results.</p> <p>Click this button to pop up the following dialog box.</p>  <p>Click OK to display the latest searching results; click Cancel to abort refreshing.</p>
Print	Click this button to print the tabular data or graphical data currently displayed.
Delete	<p>Only the QC results of the current day can be deleted.</p> <p>Select one of the searched QC results. If it is of the current day, the button will be available. Click this button to pop up the following dialog box.</p>  <p>Click OK to delete the selected result; click Cancel to abort the deletion.</p>
Reaction Curve	<p>After selecting a QC result, click this button to pop up the QC Reaction Curve dialog box, which is used to display the reaction curve of the selected QC result.</p> <p>For more information about the QC Reaction Curve dialog box, refer to the following text QC Reaction Curve.</p>
Send	<p>Click this button to send the selected QC result to LIS host.</p> <p>This button is available only when the analyzer is connected to LIS.</p>

QC Reaction Curve

At the **Daily QC** screen, after selecting a QC result, click **Reac. Curve** to pop up the **QC Reaction Curve** dialog box, as shown in Figure 4-44, where you can view the reaction curve of the selected QC result.

Figure 4-44 QC Reaction Curve Dialog Box



The following table introduces the buttons of the dialog box.

Button	Function
Refresh	Click this button to refresh the current reaction curve.
Rerun	Click this button to re-request the current QC run. It is only available for the QC runs of current day since powering on which have been finished or have no results.
Print	Click this button to print the current reaction curve.
Reac. Data	Click this button to pop up a dialog box to display the reaction data of the curve.
Close	Click this button to close the QC Reaction Curve dialog box.

4.12.3 Day to Day QC

The **Day to Day QC** screen, as shown in Figure 4-45, is used to display the QC results of the selected test among days.

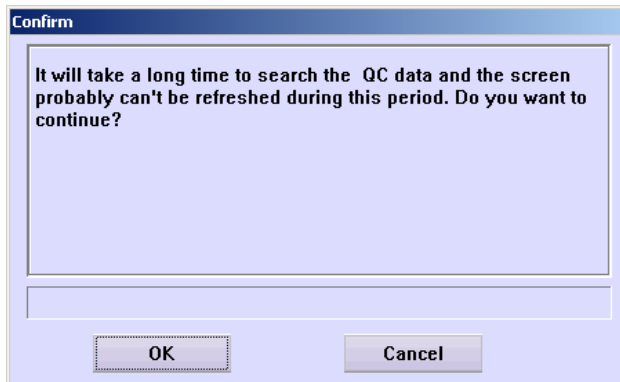
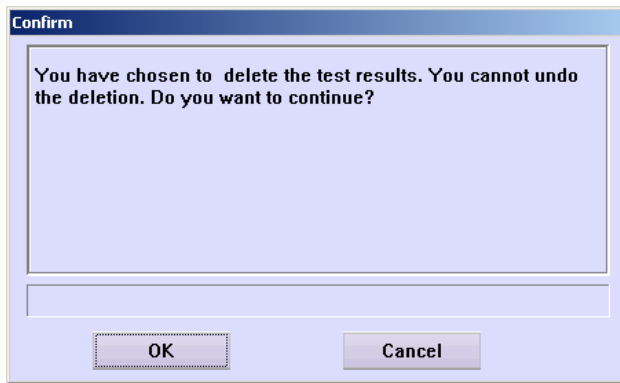
Figure 4-45 Day to Day QC Screen

Real-time	Daily QC	Day to Day QC	QC Sum.	Control		
<div> <input checked="" type="radio"/> Tabular Data <input type="radio"/> Graphical Data </div>						
<div> <div> Test: <input type="text" value="AST"/> Rule: <input type="text" value="Westgard Multi-rule"/> </div> <div> Date: <input type="text" value="2007-10-11"/> Control 1: <input type="text" value="RANDOX2"/> </div> <div> <input type="text" value="2007-10-29"/> Control 2: <input type="text"/> </div> </div>						
Test	Control	Mean Conc.	SD	Unit	Actual Result	Request Date
AST	RANDOX2	37.5	0.640	u/l		2007-10-25 16:40:29
AST	RANDOX2	37.5	0.640	u/l	37.9	2007-10-18 11:16:45
AST	RANDOX2	37.5	0.640	u/l	37.9	2007-10-18 11:16:45
AST	RANDOX2	37.5	0.640	u/l	36.5	2007-10-18 8:59:15
AST	RANDOX2	37.5	0.640	u/l	37.0	2007-10-18 8:59:15
AST	RANDOX2	37.5	0.640	u/l	37.5	2007-10-17 16:44:53
AST	RANDOX2	37.5	0.640	u/l	38.9	2007-10-17 16:44:53
AST	RANDOX2	37.5	0.640	u/l	38.1	2007-10-17 14:22:47
AST	RANDOX2	37.5	0.640	u/l	38.4	2007-10-17 14:22:47
AST	RANDOX2	37.5	0.640	u/l	37.5	2007-10-17 11:37:42
AST	RANDOX2	37.5	0.640	u/l	36.2	2007-10-17 11:37:42
AST	RANDOX2	37.5	0.640	u/l	36.7	2007-10-17 9:32:39
AST	RANDOX2	37.5	0.640	u/l	36.8	2007-10-17 9:32:39
AST	RANDOX2	37.5	0.640	u/l	37.2	2007-10-16 17:27:20
AST	RANDOX2	37.5	0.640	u/l	38.1	2007-10-16 17:27:20
AST	RANDOX2	37.5	0.640	u/l	37.8	2007-10-16 15:34:31
AST	RANDOX2	37.5	0.640	u/l	38.3	2007-10-16 15:34:31
AST	RANDOX2	37.5	0.640	u/l	37.2	2007-10-16 13:40:00
Searched QC data						
<div> <input type="button" value="Refresh"/> <input type="button" value="Print"/> <input type="button" value="Delete"/> <input type="button" value="Reac. Curve"/> <input type="button" value="Send"/> </div>						

The following table explains the parameters on the screen.

Parameter	Description
Tabular Data	Select to display QC data on the screen.
Graphical Data	Select to display QC graph on the screen.
Test	Select the test you need to view.
Date	Select the start date and end date of the QC results you need to view. The first drop-down box is start date, and the second one is the end date.
Rule	It includes Westgard Multi-rule, Cumulative Sum Check and TWIN-PLOT rule.
Control 1	Select the first control.
Control 2	Select the second control.

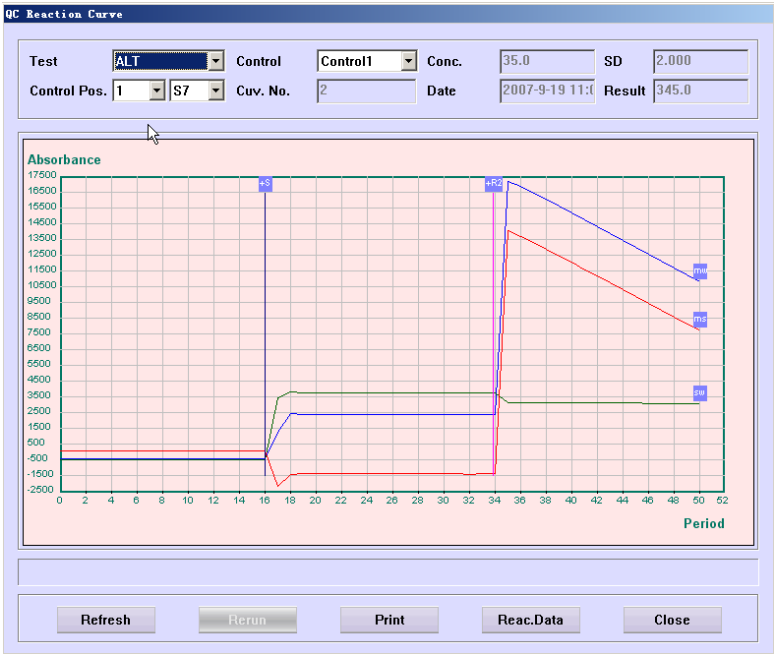
The following table introduces the buttons on the screen.

Button	Function
Refresh	<p>After setting or changing searching conditions, the system will not refresh the searching results automatically. You need to click this button to refresh and display the latest results.</p> <p>Click this button to pop up the following dialog box.</p>  <p>Click OK to display the latest searching results; click Cancel to abort refreshing.</p>
Print	Click this button to print the tabular data or graphical data currently displayed.
Delete	<p>Only the QC results of the current day can be deleted.</p> <p>Select one of the searched QC results. If it is of the current day, the button will be available. Click this button to pop up the following dialog box.</p>  <p>Click OK to delete the selected result; click Cancel to abort the deletion.</p>
Reaction Curve	<p>After selecting one of the searched QC results, click this button to pop up the QC Reaction Curve dialog box, which is used to display the reaction curve of the selected QC result.</p> <p>For more information about the QC Reaction Curve dialog box, refer to the following text QC Reaction Curve.</p>
Send	<p>Click this button to send selected QC result to LIS host.</p> <p>This button is available only when the analyzer is connected to LIS.</p>

QC Reaction Curve

At the **Day to Day QC** screen, after selecting one of the searched QC results, click **Reaction Curve** to pop up the **QC Reaction Curve** dialog box, as shown in Figure 4-46, where you can view the reaction curve of the selected QC result.

Figure 4-46 QC Reaction Curve Dialog Box



The following table introduces the buttons of the dialog box.

Button	Function
Refresh	Click this button to refresh the current reaction curve.
Rerun	Click this button to re-request the current QC run. It is only available for the QC runs of current day since powering on which have been finished or have no results.
Print	Click this button to print the current reaction curve.
Reac. Data	Click this button to pop up a dialog box to display the reaction data of the curve.
Close	Click this button to close the QC Reaction Curve dialog box.

4.12.4 Control

The **Control** screen, as shown in Figure 4-47, is where you can set the basic information, concentration and SD of a control.

Figure 4-47 Control Screen

Real-time				Daily QC		Day to Day QC		QC Sum.		Control	
Controls										Tests	
Name	Lot No.	Position	Exp. Date	Level		Test	Mean Conc.	SD			
control 1	7777		2009-04-09	Medium		ALB					
control 2	56		2009-04-09	Medium		ACP					
control 3	565		2009-04-09	Medium		ALP					
						ALT					
						AMY					
						AST					
						DBIL					
						TBIL					
						BUN					
						Ca-O					
						Ca-A					
						CO2					
						Chol					
						Creat					
						CK					
						CK-MB					
						CRP					
						FRUC					
Control Information						Mean Conc.					
Name	control 3		No.	43		SD					
Exp. Date	2009-04-09		Lot No.	565							
Position	1		Level	Medium							
<div> <div>Add</div> <div>Delete</div> <div>OK</div> <div>Cancel</div> </div>											

The following table explains the parameters on the screen.

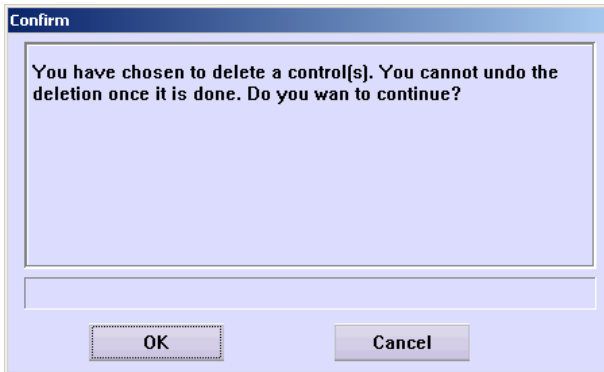
Parameter	Description
Name	Name of the control.
No.	No. of the control
Exp. Date	The control is effective before this date.
Lot No.	Lot No. of the control.
Level	Concentration level of the control It includes High, Medium and Low.
Position	Position of the control on the sample disk. The first drop-down list box is the No. of virtual sample disk, and the second one is the position on the sample disk.
Mean Conc.	Enter the mean concentration of the selected control for the selected test.
SD	Enter the SD of the selected control for the selected test.



NOTE

Ensure the right expiration date is set so that the analyzer can correctly judge whether the control has expired.

The following table introduces the buttons on the screen.

Button	Function
Add	Click this button to add a new control to the Controls list.
Delete	After selecting a control in the Controls list, click this button to pop up the following dialog box.
	
OK	Click OK to delete the selected control; click Cancel to abort the deletion.
	Click this button to save modification to relevant control information.
	Refer to the following text To Modify Control Information for detailed operations.
Cancel	Click this button to cancel modification to relevant control information.
	Refer to the following text To Modify Control Information for detailed operations.

To Modify Control Information

- 1 Select a control in the **Controls** list.
- 2 If you don't need to modify the basic information of the selected control, proceed to the next step.
Otherwise, modify the basic information in the **Control Information** area.
- 3 If you don't need to modify the concentration and SD of the selected control, proceed to the next step.
Otherwise, after selecting a test in the **Tests** list, enter concentration in the **Conc.** edit box and SD in the **SD** edit box. You can repeat this step.
- 4 If you want to save the modification, click **OK**, otherwise click **Cancel**.

4.12.5 QC Summary

The screen of **QC Summary** is shown as figure 4-48. It is used to check the result statistic of the QC tests.

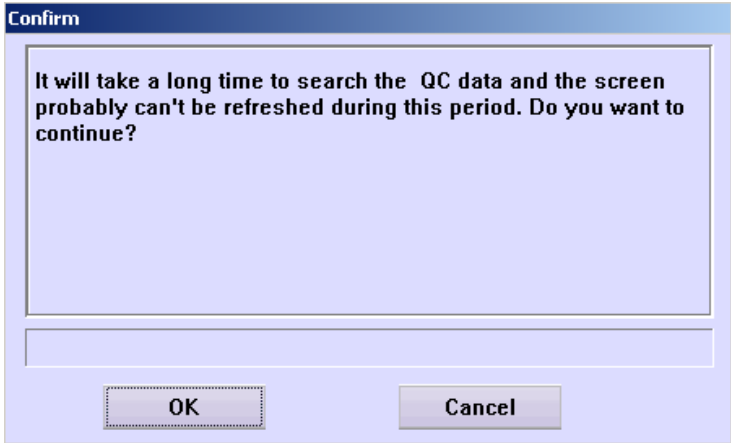
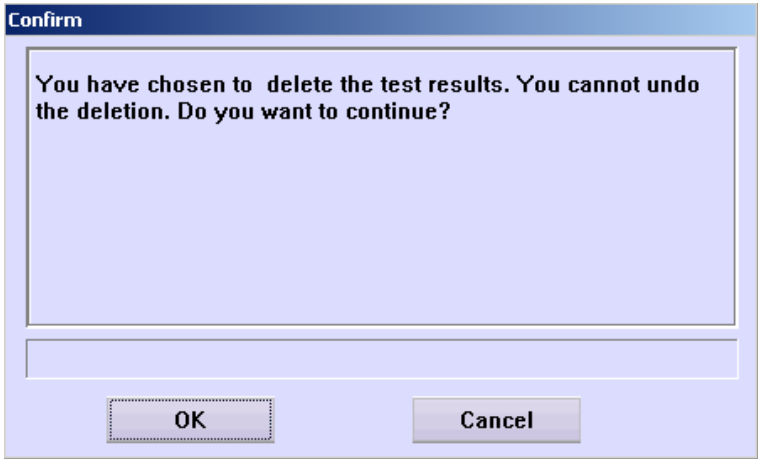
Figure 4-48 QC Summary

Real-time	Daily QC	Day to Day QC	QC Sum.	Control	
<div> <input checked="" type="radio"/> Test Result <div> Date: <input type="text" value="2007-10- 1"/> Control: <input type="text" value="RANDOX2"/> </div> <div> <input type="radio"/> Test Statistics <div> <input type="text" value="2007-10-29"/> </div> </div> </div>					
Test	Actual Result	Unit	Request Date	Ref. Range	Comments
AST		u/l	2007-10-25 16:40:29	36.220-38.780	
Cl	29.2	mmol/l	2007-10-19 17:26:56	94.040-98.360	1-2S 1-3S
Na	38.2	mmol/l	2007-10-19 17:26:56	139.760-143.440	1-2S 1-3S
K	42.10	mmol/l	2007-10-19 17:26:56	3.7600-4.1600	1-2S 1-3S
Cl	47.8	mmol/l	2007-10-19 17:22:20	94.040-98.360	1-2S 1-3S
Na	35.8	mmol/l	2007-10-19 17:22:20	139.760-143.440	1-2S 1-3S
K	96.20	mmol/l	2007-10-19 17:22:20	3.7600-4.1600	1-2S 1-3S
Li	9.20	mmol/l	2007-10-18 11:16:45	0.9020-0.9580	1-2S 1-3S
Li	9.20	mmol/l	2007-10-18 11:16:45	0.9020-0.9580	1-2S 1-3S
Cl	980.9	mmol/l	2007-10-18 11:16:45	94.040-98.360	1-2S 1-3S
Cl	983.0	mmol/l	2007-10-18 11:16:45	94.040-98.360	1-2S 1-3S
Na	1415.7	mmol/l	2007-10-18 11:16:45	139.760-143.440	1-2S 1-3S
Na	1417.7	mmol/l	2007-10-18 11:16:45	139.760-143.440	1-2S 1-3S
K	39.29	mmol/l	2007-10-18 11:16:45	3.7600-4.1600	1-2S 1-3S
K	39.19	mmol/l	2007-10-18 11:16:45	3.7600-4.1600	1-2S 1-3S

The following table introduces the parameters on the screen.

Parameter	Description
Test Result	Select to display the test results related to the target QC control
Test Statistics	Select to display the statistics of the test results related to the target QC control
Date	Select the start date and end date of the QC results you need to view. The first drop-down box is start date and the second one is the end date.
Control	Select the target QC control

The following table introduces the buttons on the screen.

Button	Function
Refresh	<p>After setting or changing searching conditions, the system will not refresh the searching results automatically. You need to click this button to refresh and display the latest results.</p> <p>After select searching conditions, click this button to pop up the following dialog box</p>  <p>Click OK to display the latest searching results; click Cancel to abort refreshing.</p>
Print	Click this button, print the QC test results and test statistics currently displayed.
Delete	<p>Select a QC test result data, then click this button to pop up the following dialog:</p>  <p>Click OK to delete the selected QC test result; Click Cancel to abort the deletion.</p>
Reaction Curve	<p>After selecting one of the searched QC test results, click this button to pop up the QC Reaction Curve dialog, which displays the reaction curve of the selected QC test result.</p> <p>For more information about the QC Reaction Curve dialog, refer to the QC Reaction Curve in section 4.12.2 Daily QC</p>

4.13 Status

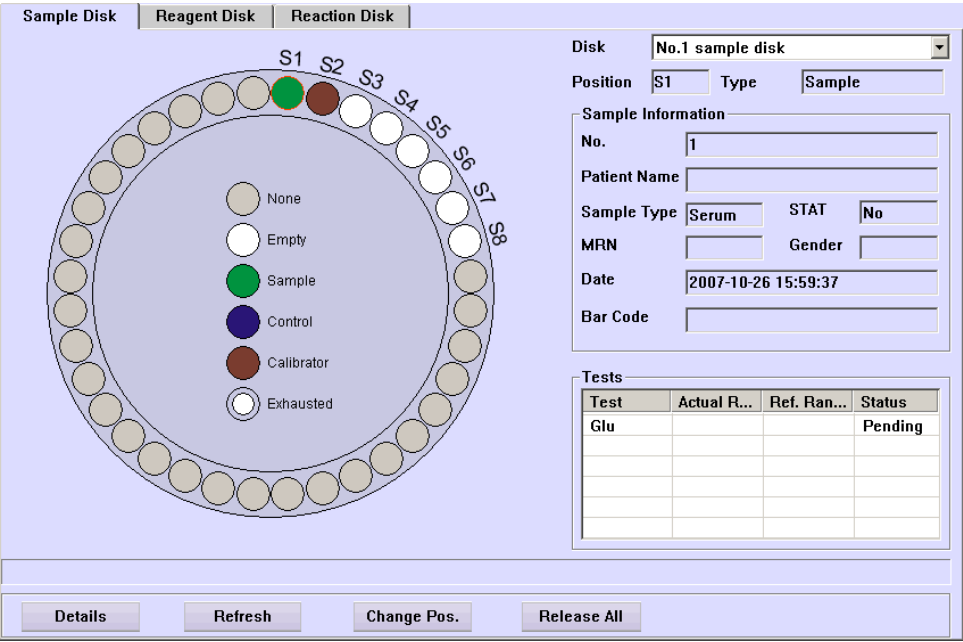
Click **Status** to enter the screen, which is used to display the current status of the sample disk, reagent disk and reaction disk.

The following sections introduce the **Status** screen by tab.

4.13.1 Sample Disk


The **Sample Disk** screen, as shown in Figure 4-49, is used to display the current status of the sample disk.

Figure 4-49 Sample Disk Screen



At this screen, the sample disk graph on the left displays current status of each sample position. Click a position to display its sample information (calibrators and controls) on the right.

The following table introduces the buttons on the screen.

**NOTE**

If the remaining sample (calibrator or control) is not enough or exhausted, you must click the **Refresh** button after adding more.

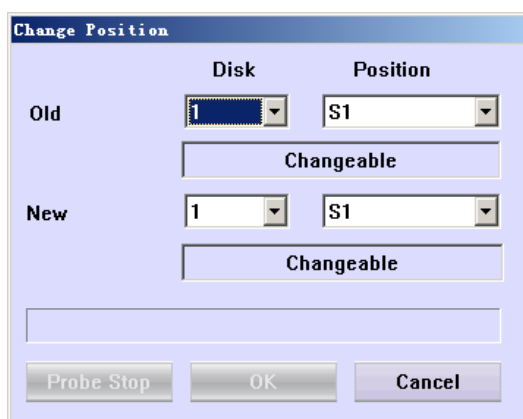
Button	Function
Refresh	When a sample (calibrator or control) is not enough or exhausted, after adding more to it, click the sample position on the sample disk graph, and then click Refresh to refresh its status.

Button	Function
Change Pos.	<p>After selecting a virtual sample disk from the Disk drop-down list box and a sample position on the sample disk graph, click Change Pos. to pop up the Change Position dialog box, where you can change position of the selected sample.</p> <p>For more information about the Change Position dialog box, refer to the following text To Reset Sample Position.</p>
Release All	<p>After selecting a virtual sample disk from the Disk drop-down list box, click this button to pop up the following dialog box.</p> <div> </div> <p>Click OK to release positions of all samples (exclusive of calibrators and controls) which have been tested; click Cancel to abort the releasing.</p>
Details	<p>After selecting a sample, click this button to pop up the Sample Information dialog box, where you can setup sample information.</p> <p>For more information about the Sample information dialog, Refer to section 4.1.1 Sample information</p>

To Reset Sample Position

At the **Sample Disk** screen, after selecting a virtual sample disk from the **Disk** drop-down list box and a sample position on the sample disk graph, click **Change Pos.** to pop up the **Change Position** dialog box, as shown in Figure 4-50.

Figure 4-50 Change Position Dialog Box



The following table explains the parameters of the dialog box.

Parameter	Description
Old	Current position of the selected sample (calibrator or control) on the sample disk.
New	New position of the selected sample (calibrator or control) on the sample disk.
Disk	No. of the virtual sample disk. Void means the selected sample (calibrator or control) is not on the sample disk.
Position	Position on the selected virtual sample disk. Void means the selected sample (calibrator or control) is not on the sample disk.

The following table introduces the buttons of the dialog box.

Button	Function
Probe stop	If the system is in testing status, and the sample (calibrator or control) position to be changed or the target position is on the sample disk currently running, you should first stop the probe, the mixing bar and the sample/reagent disk. Click this button to stop the probe, the mixing bar and the sample/reagent disk, and the button will change into Resume . After exchanging the positions, click Resume to continue.
OK	Click this button to save the new sample position you have set.
Cancel	Click this button to cancel the new sample position you have set.



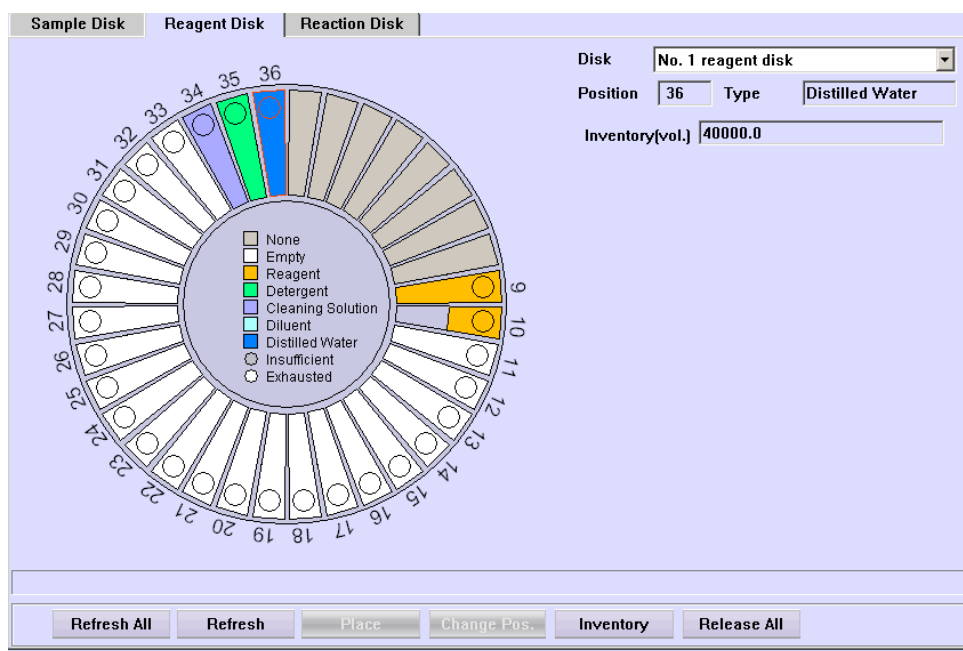
CAUTION

Do not put the probe, the mixing bar and the sample/reagent disk on hold for a long time. Otherwise, certain analyses may be affected.

4.13.2 Reagent Disk

The **Reagent Disk** screen, as shown in Figure 4-51, is used to display the current status of the reagent disk.

Figure 4-51 Reagent Disk Screen



At this screen, the reagent disk graph on the left displays current status of each reagent position. Click a position to display its reagent information on the right.



NOTE

When you select one position of a double-reagent test, both of the two positions will be selected and their reagent information will be displayed on the right side.

If the remaining reagent (distilled water or wash solution) is not enough or exhausted, you must click the **Refresh** button after adding more.

The following table introduces the buttons on the screen.

Button	Function
Refresh All	After adding more reagents (distilled water or wash solution) to all the bottles on the reagent disk, select the corresponding virtual reagent disk from the Disk drop-down list box and then click this button to refresh leftover of all the positions with bottles on the graph to full.
Refresh	When reagent (distilled water or wash solution) is not enough or exhausted, after adding more to it, select the corresponding virtual reagent disk from the Disk drop-down list box and the reagent position on the reagent disk graph, and then click this button to refresh leftover of the position on the graph to full.

Button	Function
Place	After selecting a virtual reagent disk from the Disk drop-down list box and an empty position on the reagent disk graph, click this button to pop up the following dialog box.

The 'Place' dialog box contains a table with the following data:

Test	Reagent Ty...	Position	Estima...
ALT	R1	1-1	0
	R2	1-2	0
GGT	R1	1-3	0
	R2	1-4	0
Ca	R1	1-6	0
	R2	1-5	0
Mg	R1	1-7	0
	R2	1-11	0
P	R1	1-8	0
	R2	1-12	0
TP	R1	1-9	0
	R2	1-13	0

At the bottom of the dialog box are 'OK' and 'Cancel' buttons.

Click **OK** to put the selected reagent in the selected reagent position; click **Cancel** to abort the setting.

Change Pos. After selecting a virtual reagent disk from the **Disk** drop-down list box and a reagent position on the reagent disk graph, click **Change Pos.** to pop up the **Change Position** dialog box, where you can change position of the selected reagent.

For more information about the **Change Position** dialog box, refer to the following text **To Reset Reagent Position**.

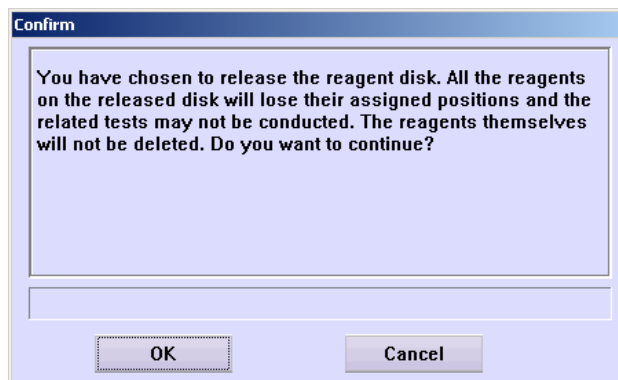
Inventory After selecting a virtual reagent disk from the **Disk** drop-down list box, click this button and a dialog box pops up.

The 'Check Reagent Inventory' dialog box has a 'Range' section with two radio buttons: 'All' (selected) and 'From' (unselected). The 'From' option is followed by a 'From' label and a dropdown menu showing '3'. This is followed by a 'To' label and another dropdown menu showing '3'. At the bottom are 'OK' and 'Cancel' buttons.

Select reagent position(s) you want to check in the dialog box. **All** means all the positions on the reagent disk; **From ... To ...** means some position(s) on the reagent disk.

Click **OK** and the system will check the remaining volume of the selected position(s); click **Cancel** to abort checking.

Button	Function
Release All	After selecting a virtual reagent disk from the Disk drop-down list box, click this button to pop up the following dialog box.

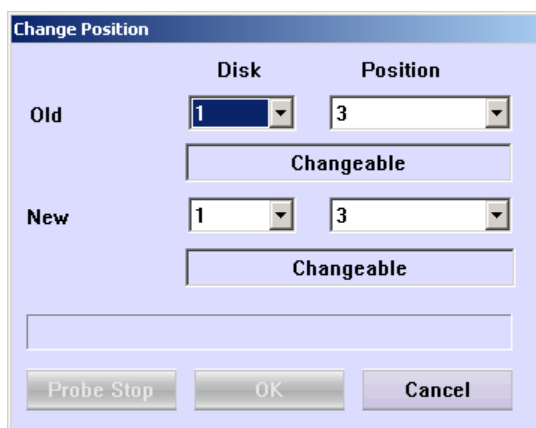


Click **OK** to release all reagent positions on the reagent disk (exclusive of No. 35 and No. 36); click **Cancel** to abort the releasing.

To Reset Reagent Position

At the **Reagent Disk** screen, after selecting a virtual reagent disk from the **Disk** drop-down list box and a reagent position on the reagent disk graph, click **Change Pos.** to pop up the **Change Position** dialog box, as shown in Figure 4-52.

Figure 4-52 Change Position Dialog Box



The following table explains parameters of the dialog box.

Parameter	Description
Old	Current position of the selected reagent on the reagent disk.
New	New position of the selected reagent on the reagent disk.
Disk	No. of the virtual reagent disk.
	Void means the selected reagent is not on the reagent disk.
Position	Position on the selected virtual reagent disk.
	Void means the selected reagent is not on the reagent disk.

The following table introduces buttons of the dialog box.

Button	Function
Probe stop	<p>If the system is in testing status, and the reagent position to be changed or the target position is on the reagent disk currently running, you should first stop the probe, the mixing bar and the sample/reagent disk.</p> <p>Click this button to stop the probe, the mixing bar and the sample/reagent disk, and the button will change into Resume.</p> <p>After exchanging the position, click Resume to continue.</p>
OK	Click this button to save the new reagent position you have set.
Cancel	Click this button to cancel the new reagent position you have set.



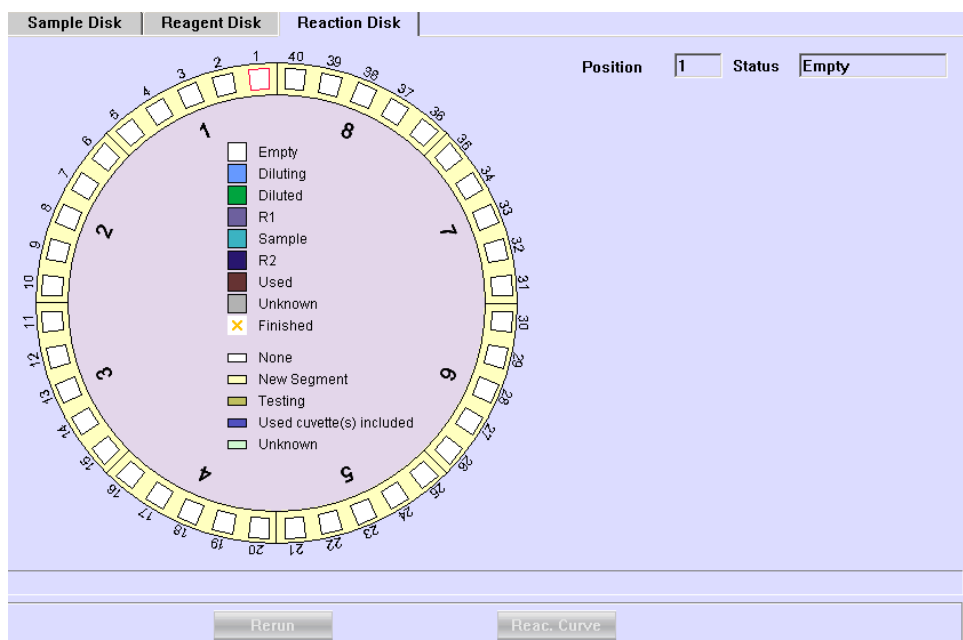
CAUTION

Do not put the probe, the mixing bar and the sample/reagent disk on hold for a long time. Otherwise, certain analyses may be affected.

4.13.3 Reaction Disk

The **Reaction Disk** screen, as shown in Figure 4-53, is used to display the current status of the reaction disk.

Figure 4-53 Reaction Disk Screen



At this screen, the reaction disk graph on the left displays current status of each cuvette position. Click a position to display its sample and testing information on the right.

The following table introduces the buttons on the screen.

Button	Function
Rerun	After clicking a cuvette that has been tested on the reaction disk graph, click this button to rerun the test with original result invalidated.
Reac. Curve	After selecting a cuvette that has been tested, click this button to pop up the Reaction Curve dialog box to view the reaction curve of the run.

4.14 Statistics

Click **Statistics** to enter the screen, which is used to display several kinds of statistical information.

The following sections introduce the **Statistics** screen by tab.

4.14.1 Worklist

The **Worklist** screen, as shown in Figure 4-54, is used to display statistical information of the tests and samples since powering on within the current day.

Figure 4-54 Worklist Screen

The screenshot shows the 'Worklist' screen with the following components:

- Tabs:** Worklist (selected), Results, Workload, Charges.
- View Options:** ☒ By Test, ☐ By Sample.
- Statistics Table:**

Test	Requested	Finished	Inventory	Estimated
ALT	2	2	40000.0 - 4...	0.0 - 0.0
CREA	4	4	40000.0 - 4...	0.0 - 0.0
TBIL	1	1	40000.0 - 4...	0.0 - 0.0
GLU	1	1	40000.0	0.0
GGT	1	1	40000.0 - 4...	0.0 - 0.0
UREA	2	2	40000.0 - 4...	0.0 - 0.0
TP	1	1	40000.0	0.0
AST	1	1	40000.0 - 4...	0.0 - 0.0
TC	1	1	40000.0	0.0
P	1	1	40000.0	0.0
ALB	0	0	40000.0	0.0
IGA	4	4	40000.0 - 4...	0.0 - 0.0
ALP	1	1	40000.0 - 4...	0.0 - 0.0
CA-III	0	0	40000.0	0.0
DBIL	0	0	40000.0 - 4...	0.0 - 0.0
CK	8	8	40000.0 - 4...	0.0 - 0.0
AMY	1	1	40000.0	0.0
LDHL	8	8	40000.0 - 4...	0.0 - 0.0
TG	1	1	40000.0	0.0
UA	0	0	40000.0	0.0
- Test Details (Right Panel):**
 - Test: ALT
 - R1:
 - Position: 1, 9
 - Name: ALT_R1
 - Inventory: 40000.0 / 195
 - Estimated: 0
 - R2:
 - Position: 1, 10
 - Name: ALT_R2
 - Inventory: 40000.0 / 727
 - Estimated: 0
- Buttons:** Refresh, Print.

Select **By Test** to display statistical information by test, and select **By Sample** to display by sample.



NOTE

When **By Test** is selected, the calculation tests and the off-system tests are not included in the statistical information; When **By Sample** is selected, they are included in the statistical information.

Requested and **Finished** in the **Statistics** list refer to No. of runs.

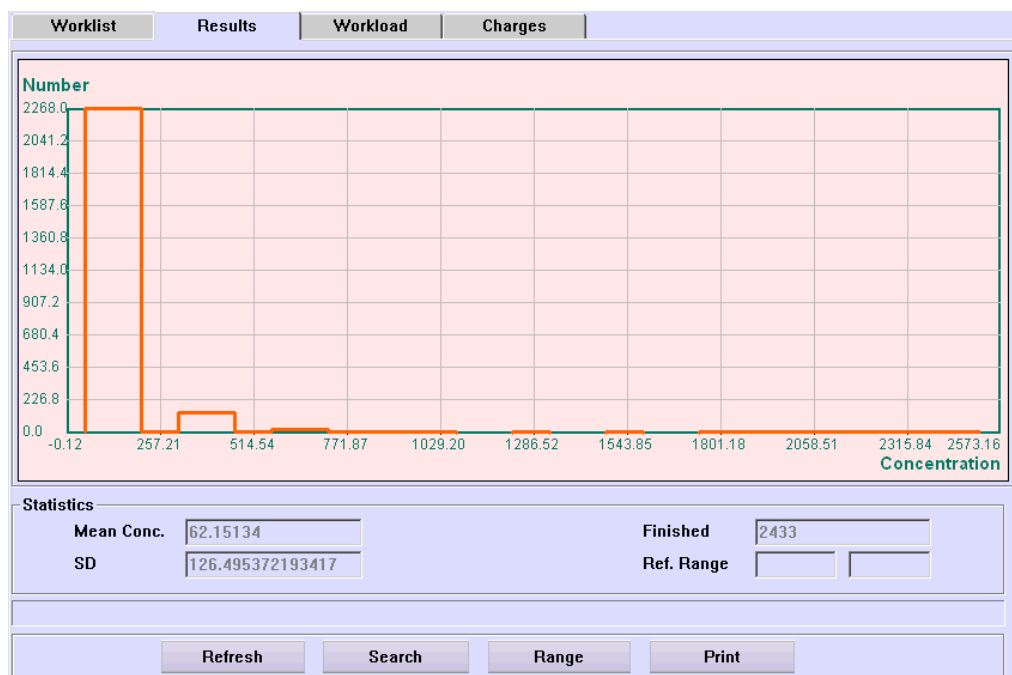
The following table introduces the buttons on the screen.

Button	Function
Refresh	The system will not refresh the statistical results automatically. You need to click this button to refresh.
Print	Click this button to print the statistical results.

4.14.2 Results

The **Results** screen, as shown in Figure 4-55, is used to display the statistical graph and data of sample results.

Figure 4-55 Results Screen



On the statistical graph, X-coordinate refers to sample concentration, and Y-coordinate refers to No. of runs.

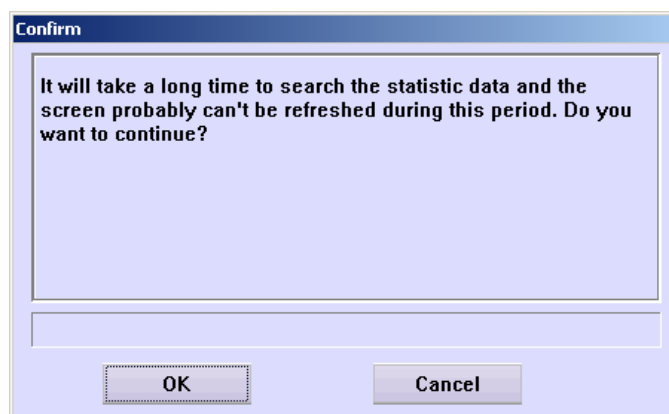
The following table explains the parameters on the screen.

Parameter	Description
Mean Conc.	Mean concentration, which is obtained by dividing sum of all searched sample results with the No. of runs.
Finished	No. of sample runs that have been finished.
SD	SD of calibration. It displays only when there's one test result.
Ref. Range	Reference range of test result. It displays only when there's one test result.

The following table introduces the buttons on the screen.

Button	Function
Refresh	The system will not refresh the statistical results automatically. You need to click this button to refresh.

Click this button to pop up the following dialog box.

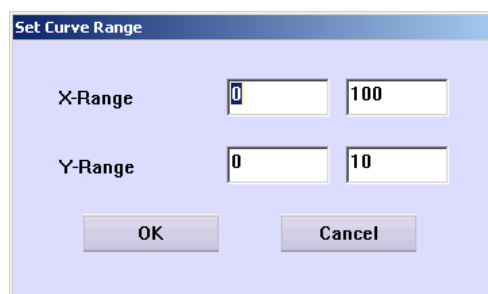


Click **OK** to refresh and display the latest statistical results; click **Cancel** to abort refreshing.

Search Click this button to pop up the **Search** dialog box, where you can set the searching conditions and search the qualified results.

For more information about the **Search** dialog box, refer to the following text **Search**.

Range Click this button to pop up the following dialog box, where you can set coordinate ranges of the statistical graph.

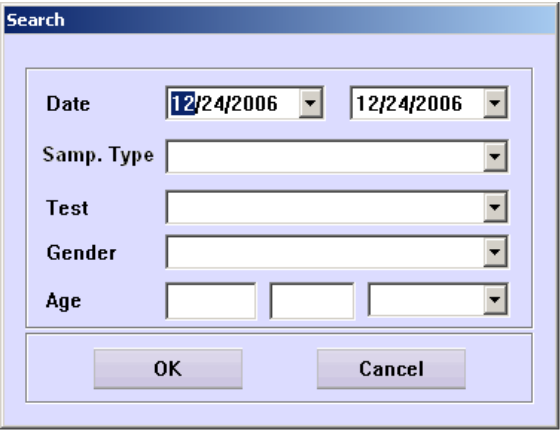


Print Click this button to print the statistical results.

Search

At the **Results** screen, click **Search** to pop up the **Search** dialog box, as shown in Figure 4-56, where you can search the sample results that meet the conditions.

Figure 4-56 Search Dialog Box



The following table explains the parameters of the dialog box.



NOTE

Void means the parameter is exclusive.

Parameter	Description
Date	Date of sample runs that you want to search. The first drop-down list box is start time, and the second one is end time.
Samp. Type	Type of the samples that you want to search.
Test	Test you want to search.
Gender	Gender of the patients you want to search.
Age	Age of the patients you want to search.

The following table introduces the buttons of the dialog box.

Button	Function
OK	Click this button to search for sample runs that meet the conditions you have set.
Cancel	Click this button to cancel searching.

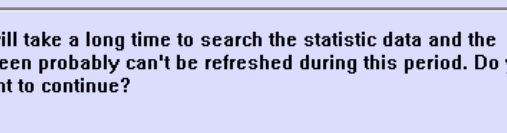
4.14.3 Workload

The **Workload** screen, as shown in Figure 4-57, is used to display workloads of all doctors.

[illegible]

Select **By Sender** to display workloads in the **Statistics** list by sender. Mark the **Dept.** check box to display workloads in the **Statistics** list by sender of the selected department.

Button	Function
Refresh	The system will not refresh the statistical results automatically. You need to click this button to refresh.



Confirm

It will take a long time to search the statistic data and the screen probably can't be refreshed during this period. Do you want to continue?

OK Cancel

Search Click this button to pop up the **Search** dialog box, where you can set the searching conditions and search the qualified results.

4 Advanced Operations

Button	Function
Print	Click this button to print the statistical results.

Search

At the **Workload** screen, click **Search** to pop up the **Search** dialog box, as shown in Figure 4-58, where you can search the workloads information that meets the conditions.

Figure 4-58 Search Dialog Box



NOTE

Void means the parameter is exclusive.

The following table explains the parameters of the dialog box.

Parameter	Description
Date	Date of sample runs that you want to search. The first drop-down list box is start time, and the second is end time.
Samp. Type	Type of the samples that you want to search.
Test	Test you want to search.
Gender	Gender of the patients you want to search.
Age	Age of the patients you want to search. Enter age low limit in the first edit box and high limit in second one. Then select an age unit from the drop-list box.

The following table introduces the buttons of the dialog box.

Button	Function
OK	Click this button to search for workloads information that meets the conditions you have set.
Cancel	Click this button to cancel searching.

4.14.4 Charges

The **Charges** screen, as shown in Figure 4-59, is used to display the charges information.

Figure 4-59 Charges Screen

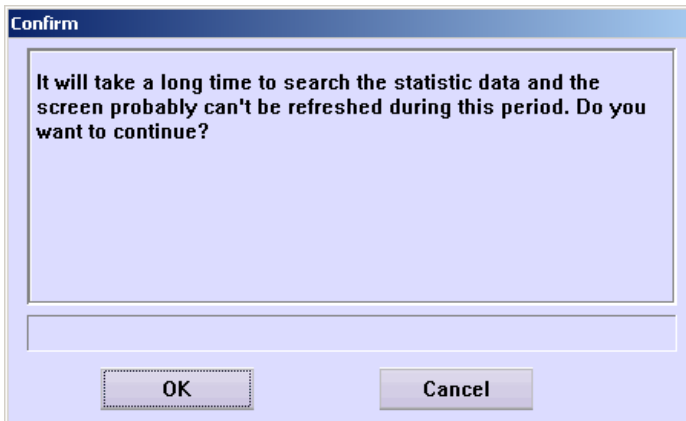
[illegible]

Select **By Patient** to display charges information in the **Statistics** list by patient.

Select **By Hospital** to display charges information in the **Statistics** list by test. Mark the **Dept.** check box to display charges information of the selected department in the **Statistics** list by test.

By selecting ***Include Test Replicates*** check box, you can add each replicate of a test to the charge statistics; otherwise only one charge for the test that is run for multiple times will be displayed.

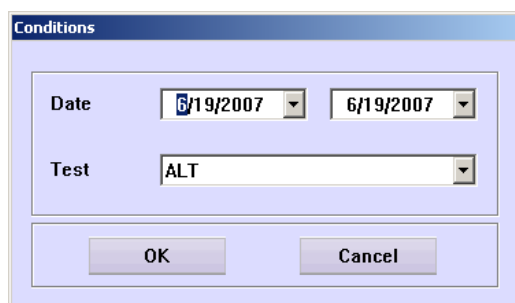
The following table introduces the buttons on the screen.

Button	Function
Refresh	<p>The system will not refresh the statistical results automatically. You need to click this button to refresh.</p> <p>Click this button to pop up the following dialog box</p>  <p>Click OK to refresh and display the latest statistical results; click Cancel to abort refreshing.</p>
Search	<p>Click this button to pop up the Conditions dialog box, where you can set the searching conditions and search the qualified results.</p> <p>For more information about the Conditions dialog box, refer to the following text Conditions.</p>
OK	<p>Click this button to save settings of test cost and price.</p> <p>Refer to the following text To Set Cost and Price for detailed operations.</p>
Cancel	<p>Click this button to cancel settings of test cost and price.</p> <p>Refer to the following text To Set Cost and Price for detailed operations.</p>
Print	Click this button to print the statistical results.

Conditions

At the **Charges** screen, click **Search** to pop up the **Conditions** dialog box, as shown in Figure 4-60, where you can search the charges information that meets the conditions.

Figure 4-60 Conditions Dialog Box



The Conditions dialog box has a title bar labeled "Conditions". It contains two rows of input fields. The first row is labeled "Date" and has two date pickers, both showing "6/19/2007". The second row is labeled "Test" and has a dropdown menu showing "ALT". At the bottom of the dialog box are two buttons: "OK" and "Cancel".

The following table explains the parameters of the dialog box.

Parameter	Description
Date	Date of sample runs that you want to search. The first drop-down list box is start time, and the second one is end time.
Test	Test you want to search.

The following table introduces the buttons of the dialog box.

Button	Function
OK	Click this button to search for charges information that meets the conditions you have set.
Cancel	Click this button to cancel searching.

To Set Cost and Price

- 1 Select the test you need to set in the **Price** list.
- 2 Enter numbers in the **Cost** and **Price** edit boxes.
- 3 If you want to save the setting, click **OK**.

4.15 Parameters

Click **Parameters** to enter the screen, where you can set tests, ISE, profiles, calculation tests, off-system tests, carryover, etc.

The following sections introduce the **Parameters** screen by tab.

4.15.1 Test

The **Test** screen is where you can set test parameters, reference ranges, calibration and QC rules of tests.

The **Test** screen includes the following tabs:

- **Parameters**
- **Reference**
- **Calibration**
- **QC**

4.15.1.1 Parameters

Figure 4-61 Parameters Screen




The following table explains the parameters on the **Parameters** screen.



NOTE

Please set parameters according to instructions of reagents. Improper settings may lead to unreliable test results.

Parameter	Description
Test	Name of the test.
No.	No. of the test. It can be edited.
Full Name	Full name of the test. It can be void.
Standard No.	Standard No. of the test. It can be void.
Reac. Type	Analyzing method, including Endpoint, Fixed-time and Kinetic.
Pri. Wave.	Primary wavelength to be used on the test.
Sec. Wave.	Secondary wavelength to be used on the test. It can be void.
Direction	It refers to the changing direction of the absorbance during the reaction process. If the absorbance increases, select Increase ; otherwise, select Decrease .

Parameter	Description
Reac. Time	<p>The unit is the sampling interval of photoelectric data, which equals to 18 seconds.</p> <p>The first edit box is start time, and the second one is end time.</p> <p>For the Endpoint method, the reaction time refers to the interval between the start of the reaction and the end of the reaction.</p> <p>For the Kinetic or Fixed-time method, the reaction time refers to the interval between the point when the reaction becomes stabilized and the point when the reaction is no longer monitored.</p> <p>If the reaction time is negative, it means that you should deduct the reagent blank or sample blank.</p> <p>The analyzer defines the time when the photoelectrical data is measured in the reaction beginning period as 0. For the single-reagent test, the start time refers to the point when the photoelectrical data is measured in the sample-dispensing period, and the start period must not be negative; for the double-reagent test, the start time refers to the point when the photoelectrical data is measured in the second reagent-dispensing period, and the start period can be negative.</p>
Incuba. Time	The system assigns the incubation time as 5 minutes.
Unit	Unit of the result.
Precision	Precision of the result.
R1	It refers to the volume (180-450µl) of the first reagent to be dispensed for the reaction. Increment is 1.
<div>  <div> NOTE <p>The sum of the entered R1, Sample Volume and R2 (as needed) must be 183µl -500µl.</p> </div> </div>	
R2	<p>It refers to the volume (30-450µl) of the second reagent to be dispensed for the reaction. Increment is 1.</p> <p>If the reaction doesn't need the second reagent, enter 0.</p>
<div>  <div> NOTE <p>The sum of the entered R1, Sample Volume and R2 (as needed) must be 183µl -500µl.</p> </div> </div>	
Sample Volume	It refers to the sample volume (3-45µl) to be dispensed for the reaction. Increment is 0.5.
<div>  <div> NOTE <p>The sum of the entered R1, Sample Volume and R2 (as needed) must be 183µl -500µl.</p> </div> </div>	

Parameter	Description
R1 Blank	<p>It refers to the allowed absorbance range of the R1 blank. (R1 refers to the reagent of a single-reagent test or the first reagent of a double-reagent test)</p> <p>The first edit box is the low limit, and the second one is the high limit. Void means no check.</p>
Mixed Blank	<p>Rgt. It refers to the allowed absorbance range of the mixture of the double-reagent test.</p> <p>The first edit box is the low limit, and the second one is the high limit. Void means no check.</p>
Linearity Range	<p>It refers to the range in which the test result is linear with the response.</p> <p>The first edit box is the low limit, and the second one is the high limit. Void means no check.</p>
Linearity Limit	It applies to the Kinetic method only. It ranges from 0 to 1.
Substrate Limit	<p>It refers to the minimum (descending curve) or maximum (ascending curve) absorbance within the given reaction time and there is still substrate left.</p> <p>It applies to the Kinetic and Fixed-time methods only. It ranges from 0 to 50,000.</p>
Factor	<p>For the test with a pre-set calculation factor, you can directly run it without running the calibration first.</p> <p>Void means the calculation factor is invalid.</p>
Prozone check	<p>Select to check the prozone.</p> <p>The following parameters are available only when it is selected.</p>
q1	<p>Prozone test point q1.</p> <p>It is available when the Prozone check is selected.</p>
q2	<p>Prozone test point q2.</p> <p>It is available when the Prozone check is selected.</p>
q3	<p>Prozone test point q3.</p> <p>It is available when the Prozone check is selected.</p>
q4	<p>Prozone test point q4.</p> <p>It is available when the Prozone check is selected.</p>
PC	<p>Prozone limit PC.</p> <p>It is available when the Prozone check is selected.</p>
Abs	<p>Lower limit of prozone absorbance.</p> <p>It is available when the Prozone check is selected.</p>

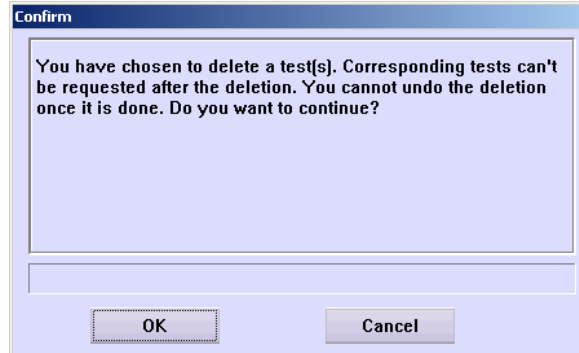


NOTE

If the **Factor** is set, be sure not to set calibration rule at the **Calibration** screen. Otherwise, the analyzer will run the calibration test to obtain calibration parameters rather than calculate them with the **Factor**.

The following table introduces the buttons on the **Parameters** screen.

Button	Function
Add	Click this button to add a new test.
Delete	After selecting a test, click this button to pop up the following dialog box.



Click **OK** to delete the selected test; click **Cancel** to abort the deletion.

OK	After selecting a test and setting parameters for it, click this button to save the setting.
Cancel	After selecting a test and setting parameters for it, click this button to cancel the setting.

4.15.1.2 Reference

Figure 4-62 Reference Screen

	Test	ISE	Profile	Calculation	Off-system	Carryover
ALT	Parameters	Reference	Calibration	QC		
CREA	No.	Gender	Sample Type	Age	Low	High
TBIL	1	Male	Serum	10 - 20 Year	1000.00	20000.00
GLU						
GGT						
UREA						
TP						
AST						
TC						
P						
ALB						
IGA						
ALP						
CA-III						
DBIL						
CK						
AMY						
LDHL						
TG						
UA						
HDL						
LDL						
MG						
APOAI						
LP(A)						
Idhp						
H2O						
AKZC						

Gender	Sample Type	Age	Low	High
Male ▾	Serum ▾	10 ▢ 20 ▢ Year ▾	1000 ▢	20000 ▢
<button>Add</button>	<button>Delete</button>	<button>OK</button>	<button>Cancel</button>	

The following table explains the parameters on the **Reference** screen.

Parameter	Description
Gender	Gender of the patients.
Sample Type	Type of the samples.
Age	Age of the patients.
Low	Low limit of reference range for the sample results.
High	High limit of reference range for the sample results.

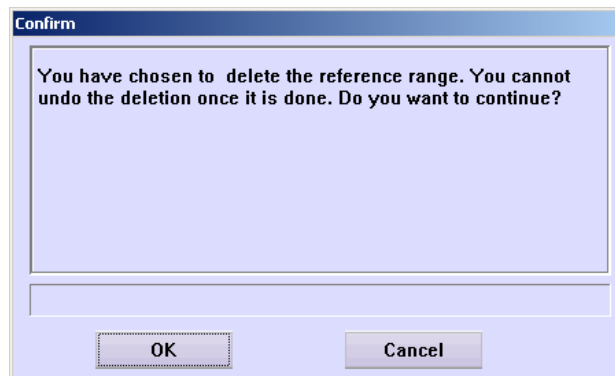


NOTE

When the test, **Gender** and **Sample Type** of two reference ranges are the same, the ranges of **Age** should not contain or intersect with each other.

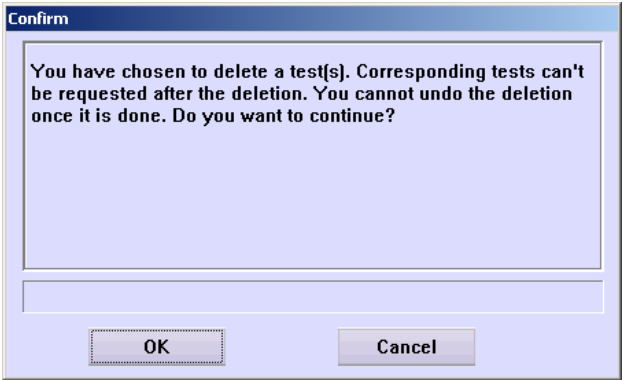
The following table introduces the buttons on the **Reference** screen.

Button	Function
Add (upper)	Click this button to add a new reference range.
Delete (upper)	After selecting a reference range, click this button to pop up the following dialog box.



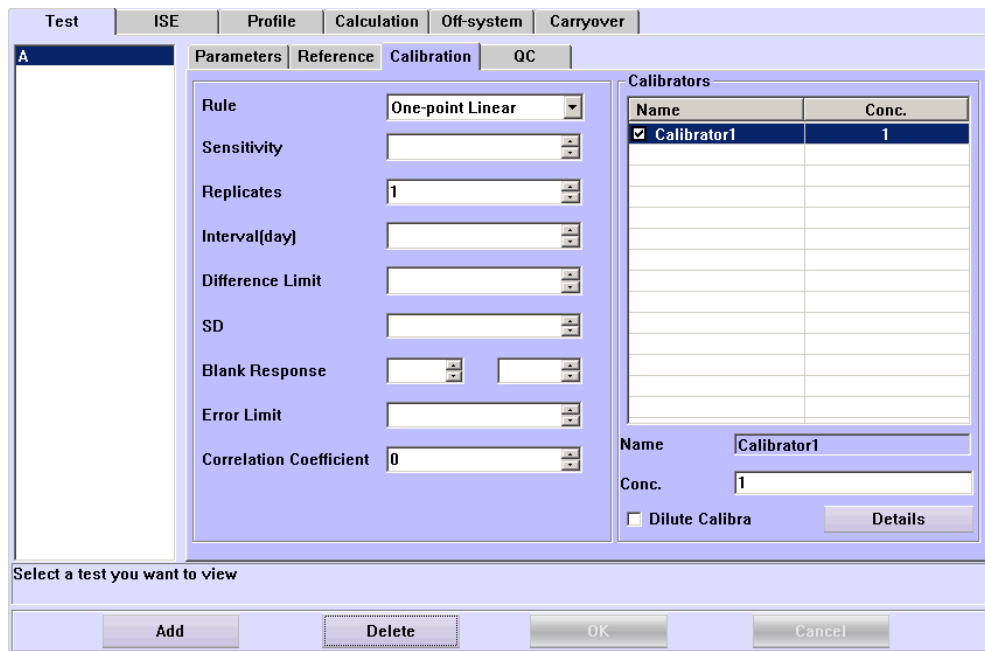
Click **OK** to delete the selected range; click **Cancel** to abort the deletion.

Add (lower)	Click this button to add a new test.
-------------	--------------------------------------

Button	Function
Delete (lower)	After selecting a test, click this button to pop up the following dialog box.
 <p>The dialog box is titled 'Confirm'. It contains the text: 'You have chosen to delete a test(s). Corresponding tests can't be requested after the deletion. You cannot undo the deletion once it is done. Do you want to continue?'. At the bottom, there are two buttons: 'OK' and 'Cancel'.</p>	
OK	Click OK to delete the selected test; click Cancel to abort the deletion.
Cancel	After selecting a reference range and modifying the relevant parameters of it, click this button to save the setting.
	After selecting a reference range and modifying the relevant parameters of it, click this button to cancel the setting.

4.15.1.3 Calibration

Figure 4-63 Calibration Screen



The screenshot shows the 'Calibration' tab of a software interface. The main window has tabs for 'Test', 'ISE', 'Profile', 'Calculation', 'Off-system', and 'Carryover'. The 'Calibration' tab is active, showing a list of tests on the left and a 'Calibrators' table on the right. The 'Calibrators' table has columns for 'Name' and 'Conc.'. The first row is 'Calibrator1' with a concentration of '1'. Below the table, there are fields for 'Name' (Calibrator1) and 'Conc.' (1), and a checkbox for 'Dilute Calibra'. At the bottom, there are buttons for 'Add', 'Delete', 'OK', and 'Cancel'.

The following table explains the parameters on the **Calibration** screen.

Parameter	Description
Rule	Calibration rule.

Parameter	Description
Sensitivity	<p>It refers to the difference between the response of the largest-concentration calibrator and that of the smallest-concentration calibrator. The system will alert you once the actual difference exceeds this limit.</p> <p>Void means no check.</p>
Replicates	It refers to the times of each calibration test. It ranges from 1 to 5.
Interval	<p>It refers to the interval (0-99 days) between two adjacent auto reminding of calibrations. The analyzer will remind you of the next calibration when the time is up.</p> <p>Void or 0 means the analyzer will not remind you the next calibration automatically.</p>
Difference Limit	<p>It refers to the difference between the calibration parameter k (slope of the calibration curve) of current and last calibrations.</p> <p>Void means no check.</p>
SD	<p>SD of calibration curve. It applies to non-linear calibrations only.</p> <p>The default is 0, which means no check.</p>
Blank Response	<p>It refers to the response limit for the 0-concentration calibrators.</p> <p>The first edit box is the low limit, and the second one is the high limit. Void means no check.</p>
Error Limit	<p>Error limit of repeated tests. It is within 0 and 50000.</p> <p>Void means no check.</p>
Correlation Coefficient	<p>Correlation coefficient of calibration curve. It applies to the multi-point linear and non-linear calibrations only.</p> <p>It ranges from 0 to 1.</p> <p>0 means no check.</p>
Name	Name of the calibrator.
Conc.	Concentration of calibrator for the selected test.
Dilute Calibra	Select a calibrator from the list of calibrators, and then select dilute calibra , which means using selected calibrator for dilute calibration.

Parameter	Description
Details	After selecting the calibrator from the list of calibrators, select Dilute Calibra ; Click Details to pop up the following dialog:

	Sample Volume for D...	Dilution Ratio
<input checked="" type="checkbox"/>	10	1
<input type="checkbox"/>	0	0
<input type="checkbox"/>	0	0
<input type="checkbox"/>	0	0
<input type="checkbox"/>	0	0
<input type="checkbox"/>	0	0
<input type="checkbox"/>	0	0
<input type="checkbox"/>	0	0
<input type="checkbox"/>	0	0
<input type="checkbox"/>	0	0

- 1 Set the sample volume (original control volume) for dilution (3-80) and the dilution ratio (3-150), the dilution ratio = the total diluted volume/the sample volume for dilution. Ensure the total diluted volume is in the range of 180-450 and the volume of diluent is no less than 160.
- 2 The value of the dilution ratio can not be the same if more than one dilution ratios are set for the test.
- 3 Different dilution ratios are related to a serial of calibrators with different concentrations.
- 4 The total number of calibrators for a calibration test=the number of calibrators selected from the list + the number of diluted calibrators -1; For example, to set a calibration test, 2 calibrators was selected from the list, one of them was diluted to 3 different concentrations for dilution calibration. The total number of calibrators for the test is 4.

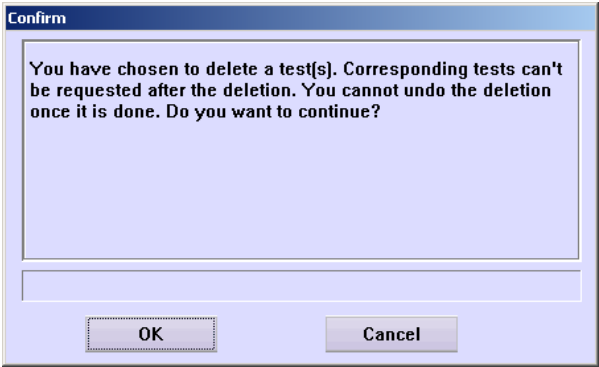


NOTE

You must determine the number of the calibrators to be used according to the selected calibration rule.

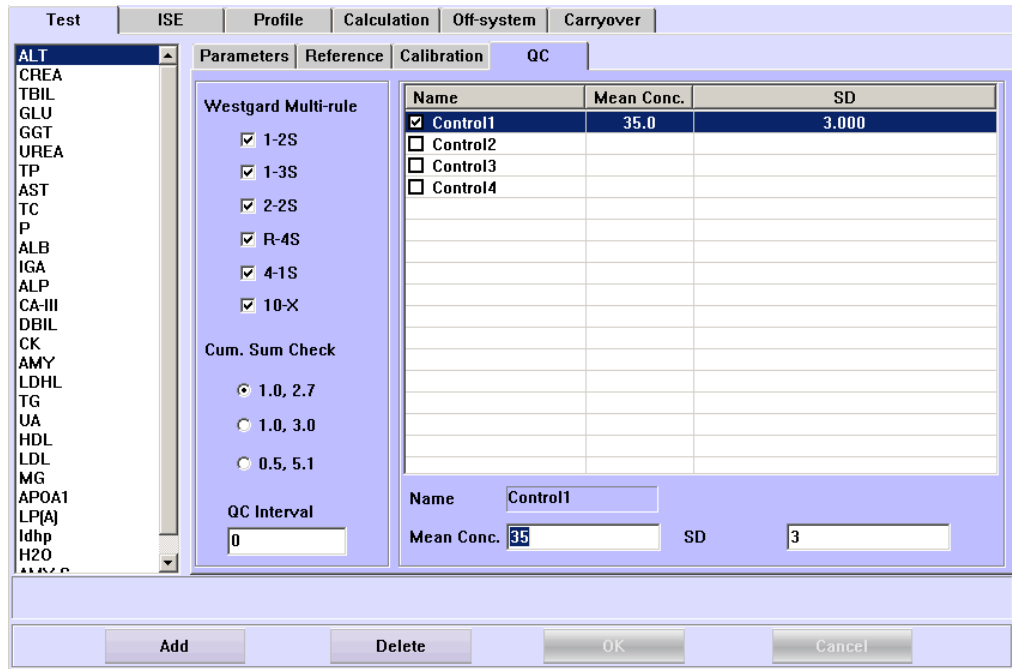
The following table introduces the buttons on the **Calibration** screen.

Button	Function
Add	Click this button to add a new test.

Button	Function
Delete	After selecting a test, click this button to pop up the following dialog box.
	 <p>The dialog box is titled 'Confirm' and contains the text: 'You have chosen to delete a test(s). Corresponding tests can't be requested after the deletion. You cannot undo the deletion once it is done. Do you want to continue?'. At the bottom are 'OK' and 'Cancel' buttons.</p>
OK	Click OK to delete the selected test; click Cancel to abort the deletion.
Cancel	After selecting a test and setting the calibration rule for it, click this button to save the setting.
	After selecting a test and setting the calibration rule for it, click this button to cancel the setting.

4.15.1.4 QC

Figure 4-64 QC Screen



The QC Screen interface shows a list of tests on the left, including ALT, CREA, TBIL, GLU, GGT, UREA, TP, AST, TC, P, ALB, IGA, ALP, CA-III, DBIL, CK, AMY, LDHL, TG, UA, HDL, LDL, MG, APOA1, LP(A), Idhp, H2O, and AMY C. The main area is divided into tabs: Parameters, Reference, Calibration, and QC. The QC tab is active, showing a table with columns for Name, Mean Conc., and SD. The table contains four rows: Control1 (checked), Control2, Control3, and Control4. Below the table, there are input fields for Name (Control1), Mean Conc. (35), and SD (3). At the bottom are buttons for Add, Delete, OK, and Cancel.

Name	Mean Conc.	SD
<input checked="" type="checkbox"/> Control1	35.0	3.000
<input type="checkbox"/> Control2		
<input type="checkbox"/> Control3		
<input type="checkbox"/> Control4		

Westgard Multi-rule

- ☒ 1-2S
- ☒ 1-3S
- ☒ 2-2S
- ☒ R-4S
- ☒ 4-1S
- ☒ 10-X

Cum. Sum Check

- ☒ 1.0, 2.7
- ☐ 1.0, 3.0
- ☐ 0.5, 5.1

QC Interval

0

Name: Control1

Mean Conc.: 35 SD: 3

Add Delete OK Cancel

The following table explains the parameters on the **QC** screen.

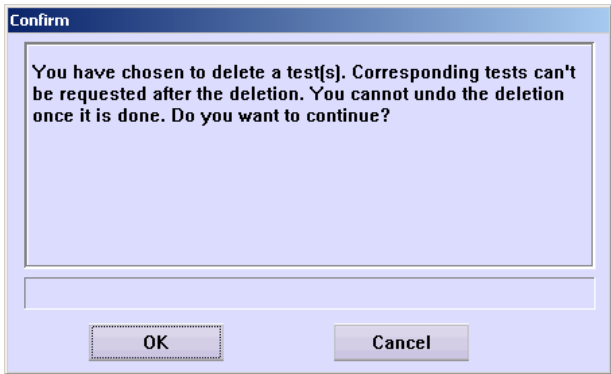
Parameter	Description
Westgard Multi-rule	QC rule. It is related to the test and has nothing to do with the control. Set the sub rule for the selected test.
Cum. Sum Check	QC rule. It is related to the test and has nothing to do with the control. Set the sub rule for the selected test.
QC Interval	It refers to the number of sample runs between two adjacent auto QC tests. The default is 0, which means the analyzer will not perform QC automatically.
Name	Name of the control.
Mean Conc.	It refers to the average concentration of the selected control for the selected test.
SD	It refers to the concentration SD of the selected control for the selected test.



NOTE

If **Auto QC** on the **System** screen is selected and **QC Interval** on the **Test** screen is not 0, the analyzer will automatically rerun QC tests among sample tests.

The following table introduces the buttons on the **QC** screen.

Button	Function
Add	Click this button to add a new test.
Delete	After selecting a test, click this button to pop up the following dialog box.
	
OK	Click OK to delete the selected test; click Cancel to abort the deletion.
	After selecting a test and setting QC rule for it, click this button to save the setting.

Button	Function
Cancel	After selecting a test and setting QC rule for it, click this button to cancel the setting.

4.15.2 ISE

The **ISE** screen, where you can set parameters, reference ranges and QC rules of ISE analytes, includes the following tabs:

- **Parameters**
- **Reference**
- **QC**

4.15.2.1 Parameters

Figure 4-65 Parameters Screen

The following table explains the parameters on the **Parameters** screen.

Parameter	Description
Name	Name of the ISE analyte.
No.	No. of the analyte. It cannot be edited.
Full Name	Full name of the analyte. It can be void.
Standard No.	Standard No. of the analyte. It can be void.
Precision	Precision of the result.
Range	Reference range of test result.

The following table introduces the buttons on the **Parameters** screen.

Button	Function
OK	After selecting an analyte and setting parameters for it, click this button to save the settings.
Cancel	After selecting an analyte and setting parameters for it, click this button to cancel the settings.

4.15.2.2 Reference

Refer to 4.15.1.2 Reference for details.

4.15.2.3 QC

Refer to 4.15.1.4 QC for details.

4.15.3 Profile

Tests grouped together for certain clinical purposes (for instance liver function) constitute a profile.

The **Profile** screen, as shown in Figure 4-66, is where you can set profiles.

Figure 4-66 Profile Screen

The screenshot shows the 'Profile' screen with a tabbed interface. The 'Profile' tab is selected. On the left, a list of profiles includes 'Daily Precision', 'Profile2', 'Profile3', and 'Profile4'. The main area contains a table with columns: Test, ISE, Profile, Calculation, Off-system, and Carryover. The table lists various tests and their associated parameters. At the bottom, there are input fields for 'Name' (set to 'Daily Precision'), 'No.' (set to '1'), and 'Std. No.'. Below these are buttons for 'Add', 'Delete', 'OK', and 'Cancel'.

Test	ISE	Profile	Calculation	Off-system	Carryover
ALT	CREA	TBIL	GLU	GGT	
UREA	TP	AST	TC	P	
ALB	IGA	ALP	CA-III	DBIL	
CK	AMY	LDHL	TG	UA	
HDL	LDL	MG	AP0A1	LP[A]	
Idhp	H2O	AMY-S			

Off-sy... Off-sy... Off-sy...
Off-sy... Off-sy...
K Na Cl

Name: Daily Precision No.: 1 Std. No.:
Add Delete OK Cancel

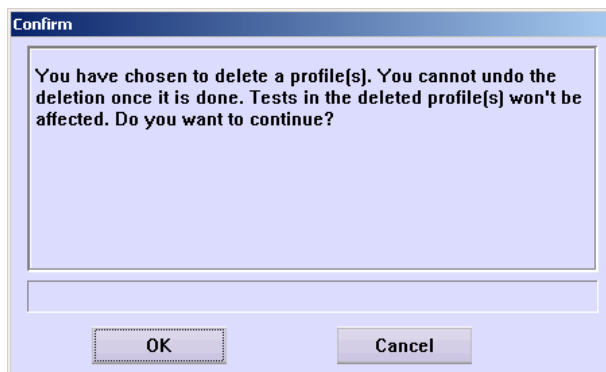
The following table explains the parameters on the screen.

Parameter	Description
Name	Enter the name of profile.
No.	Sequence number of profile.

Parameter	Description
Std. No.	Enter the standard No. of profile.

The following table introduces the buttons on the screen.

Button	Function
Add	Click this button to add a new profile.
Delete	After selecting a profile, click this button to pop up the following dialog box.



Click **OK** to delete the selected profile; click **Cancel** to abort the deletion.

OK	After selecting a profile and editing its name or selecting tests for it, click this button to save the setting.
Cancel	After selecting a profile and editing its name or selecting tests for it, click this button to cancel the setting.

4.15.4 Calculation

Calculating certain tests can derive certain new tests of clinical purpose, such as A/G, TBil-DBil and so forth.

The **Calculation** screen is where you can set parameters and formulas for calculation tests.

The **Calculation** screen includes two tabs:

- **Parameters**
- **Reference**

4.15.4.1 Parameters

Figure 4-67 Parameters Screen

The screenshot shows the 'Parameters' screen with the 'Calculation' tab selected. On the left, there is a list of calculation tests: Calculation1, Calculation2, and Calculation3. The main area displays a grid of parameters. Below the grid is a formula editor with fields for Test (Calculation1), Test No. (1), Standard No., Precision (Integer), Full Name, and Unit (g/ml). The formula field contains '[ALT]-[CA-III]*[HDL]'. To the right of the formula field is a numeric keypad and a list of available parameters: ALT, CA-III, and HDL. At the bottom, there are buttons for Add, Delete, OK, and Cancel.

The following table explains the parameters on the screen.

Parameter	Description
Test	Name of the calculation test.
Test No.	No. of the calculation test. It cannot be edited.
Standard No.	Standard No. of the calculation test. It can be void.
Precision	It refers to number of decimal places the calculation test result should have.
Full Name	Full name of the calculation test. It can be void.
Unit	Unit of the calculation test result.

The following table introduces the buttons on the screen.

Button	Function
0-9	Click these buttons to enter numbers in the formula.
+ - * /	Click these buttons to enter +, -, * and / symbols in the formula.
. ()	Click these buttons to enter the decimal point . and () in the formula.
Clear	Click this button to remove the current formula.
Add to Formula	Select a test in the above box and then click this button to add it to the formula.
Add	Click this button to add a new calculation test.

Button	Function
Delete	After selecting a test, click this button to pop up the confirm dialog box. Click OK to delete the selected test; click Cancel to abort the deletion.
OK	Click this button to save settings of the parameters and formula. Refer to the following text To Set Calculation Test for detailed operations.
Cancel	Click this button to ignore settings of the parameters and formula. Refer to the following text To Set Calculation Test for detailed operations.

To Set Calculation Test

- 1 Select a calculation test.
- 2 Set the parameters of the selected calculation test.
- 3 Select tests that are related to the selected calculation test from the list on the top screen.
- 4 Click the 0-9 buttons, operators and **Add to Formula** button to edit the formula. The 0-9 and operators can also be entered from the keyboard.
- 5 If you want to save the settings, click **OK**.

4.15.4.2 Reference

Refer to 4.15.1.2 Reference for details.

4.15.5 Off-system

All the tests that are not run by the analyzer are referred to as the off-system tests. You can manually enter the off-system test results into the system to print out them in the patient report.

The **Off-system** screen is where you can manage the information of off-system tests.

The Off-system screen includes two tabs:

- **Parameters**
- **Reference**

4.15.5.1 Parameters

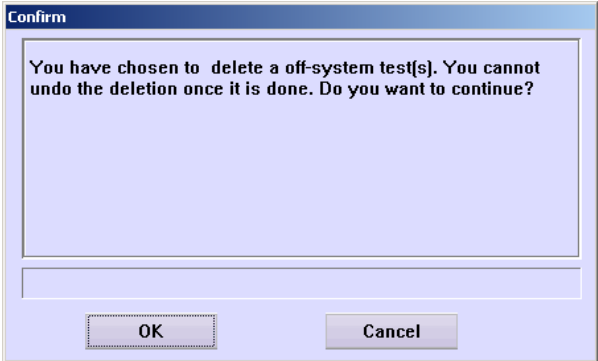
Figure 4-68 Parameters Screen

The screenshot shows a software window titled 'Parameters Screen'. At the top, there is a horizontal menu bar with the following tabs: 'Test', 'ISE', 'Profile', 'Calculation', 'Off-system', and 'Carryover'. Below the menu bar, on the left side, is a vertical list of five items: 'Off-system1', 'Off-system2', 'Off-system3', 'Off-system4', and 'Off-system5'. The 'Off-system1' item is currently selected. To the right of this list is a large rectangular area divided into two tabs: 'Parameters' and 'Reference'. The 'Parameters' tab is active, displaying several input fields and dropdown menus. These include: 'Name' (text box with 'Off-system1'), 'Full Name' (text box), 'Test No.' (text box with '1'), 'Result Type' (dropdown menu with 'Quantitative' selected), 'Standard No.' (text box), 'Qual. Type' (dropdown menu), 'Precision' (dropdown menu with 'Integer' selected), and 'Unit' (dropdown menu with 'g/ml' selected). At the bottom of the window, there is a horizontal bar containing four buttons: 'Add', 'Delete', 'OK', and 'Cancel'.

The following table explains the parameters on the screen.

Parameter	Description
Name	Name of the off-system test.
Full Name	Full name of the off-system test.
Test No.	No. of the off-system test. It cannot be edited.
Result Type	It includes Qualitative and Quantitative . When you select Qualitative , the Unit and Precision are disabled; when you select Quantitative , the Qual. Type is disabled.
Standard No.	Standard No. of the off-system test. It can be void.
Qual. Type	Qualitative reference for the off-system test result.
Precision	Precision of the off-system test result.
Unit	Unit of the off-system test result.

The following table introduces the buttons on the screen.

Button	Function
Add	Click this button to add a new off-system test.
Delete	After selecting a test in the test list, click this button to pop up the following dialog box.
	
	Click OK to delete the selected off-system test; click Cancel to abort the deletion.
OK	After selecting an off-system test and modifying the information of it, click this button to save the setting.
Cancel	After selecting an off-system test and modifying the information of it, click this button to cancel the setting.

4.15.5.2 Reference

Refer to 4.15.1.2 Reference for details.

4.15.6 Carryover

Carryover between adjacent reagents, though minimized by the washing process, is still a factor to be taken into account. This carryover may impose serious effect on certain reagents and consequently on the related test results.

This **Carryover** screen is designed so that you can minimize this effect by keeping the tests whose reagents may affect each other as far away from each other as possible, or, if this is not an option, ordering extra washing process before analyzing those tests.

The **Carryover** screen, as shown in Figure 4-69, is where you can set the carryover information of reagents among tests.

Figure 4-69 Carryover Screen

Test	ISE	Profile	Calculation	Off-system	Carryover		
ALT_R1		ALT_R1	ALT_R2	CREA_R1	TBIL_R1	TBIL_R2	GLU_R1
GGT_R1		GGT_R2	UREA_R1	UREA_R2	TP_R1	AST_R1	
AST_R2		TC_R1	P_R1	ALB_R1	IGA_R1	IGA_R2	
ALP_R1		ALP_R2	CA-III_R1	DBIL_R1	DBIL_R2	CK_R1	
CK_R2		AMY_R1	LDHL_R1	LDHL_R2	TG_R1	UA_R1	
HDL_R1		HDL_R2	LDL_R1	LDL_R2	MG_R1	APOA1_R1	
APOA1_R2		LP(A)_R1	LP(A)_R2	CREA_R2	Idhp_R1	Idhp_R2	

ALT_R1	ALT_R2	CREA_R1	TBIL_R1	TBIL_R2	GLU_R1
GGT_R1	GGT_R2	UREA_R1	UREA_R2	TP_R1	AST_R1
AST_R2	TC_R1	P_R1	ALB_R1	IGA_R1	IGA_R2
ALP_R1	ALP_R2	CA-III_R1	DBIL_R1	DBIL_R2	CK_R1
CK_R2	AMY_R1	LDHL_R1	LDHL_R2	TG_R1	UA_R1
HDL_R1	HDL_R2	LDL_R1	LDL_R2	MG_R1	APOA1_R1
APOA1_R2	LP(A)_R1	LP(A)_R2	CREA_R2	Idhp_R1	Idhp_R2

Confirm your settings

OK Cancel

At the **Carryover** screen, current reagents are listed in the upper field and the reagents that may be affected by the current reagents are listed in the lower field.

The following table introduces the buttons on the screen.

Button	Function
OK	Click this button to save the settings of carryover information. Refer to the following text To Set Carryover Parameters for a Reagent for detailed operations.
Cancel	Click this button to ignore the settings of carryover information. Refer to the following text To Set Carryover Parameters for a Reagent for detailed operations.

To Set Carryover Parameters for a Reagent

- 1 Select the desired test from the list tree or the upper field.
- 2 Select the reagents that may be affected by the current test from the lower field.
- 3 If you want to save the settings, click **OK**.

4.16 Setup

Click **Setup** to enter the screen, where you can set various parameters.

The following sections introduce the **Setup** screen by subtab.

4.16.1 System

The **System** screen is where you can set basic parameters, ISE unit, LIS and data dictionary for the analyzer.

At the **System** screen, there are five tabs:

- **Basic**
- **ISE**
- **Bar Code**
- **LIS**
- **Dictionary**

4.16.1.1 Basic

The **Basic** screen, as shown in Figure 4-70, is where you can set the basic parameters of the analyzer.

Figure 4-70 Basic Screen

The screenshot shows the 'Basic' configuration screen. It includes settings for reagent disks, sample disks, washing cycles, reagent alarm, dilution ratio, sample volume, test order, and various QC and calibration options. There are also options for rerun setup and wash procedures. The interface is in Chinese, with a '宋体' (Songti) font selection button.

The following table explains the parameters on the screen.

Parameter	Description
Number of Rgt. Disks	Number of virtual reagent disks.
Number of Samp. Disks	Number of virtual sample disks.
Wash When Started up	It refers to the times the analyzer should wash the probe and the mixing bar during every startup.
Wash When Shut Down	It refers to the times the analyzer should wash the probe and the mixing bar during every shutdown.

Parameter	Description
Reagent Alarm Limit	It refers to the number of tests for insufficient reagent. When the available reagent is not enough for so many tests, the analyzer gives alarm.
Dilution Ratio	It refers to the dilution ratio to dilute the sample when auto rerunning. It ranges from 4 to 150.
Sample Volume	It refers to the volume of the sample to be aspirated when auto rerunning. It ranges from 3µl to 45µl.
Test Order	<p>It refers to the order that samples are analyzed. There are four options available: By Request Order, By Optimal Time, By Test and By Sample.</p> <p>By Request Order: The analyzer will run tests in the request order.</p> <p>By Optimal Time: The analyzer will rearrange the test in order to ensure each period has the maximum time for sampling.</p> <p>By Test: The analyzer will arrange the test order by reaction time and run tests by assay.</p> <p>By Sample: The analyzer will run samples by sequence No. of sample.</p>
Auto QC	When selected, it means the analyzer will automatically run QC tests among sample tests.
QC Summary Auto Print	When selected, it means the system will print the QC summary after QC test is completed.
Print after Sample Run	When selected, it means the system will remind you to print patient report after tests have been finished.
Request Test with Reagent Not Positioned	When selected, it means you can request tests with reagent positions not specified, but the analyzer will not run the tests unless the reagents are positioned.
Request Calibration with calibrator Not Positioned	When selected, it means you can request calibration tests with calibrator positions not specified, but the analyzer will not run the calibrations unless the calibrators are positioned.
Request QC with control Not Positioned	When selected, it means you can request QC tests with control positions not specified, but the analyzer will not run the QCs unless the controls are positioned.
Request un-calibrated tests	When selected, it means you can request samples, QCs for the un-calibrated tests that meet the calibration requirements, and the analyzer will request the calibrations automatically.
Alarm Volume	Select it and then move the slider to set the volume of the alarm bell.
Obtain patient information by Admission No.	<p>When selected, after entering the Admi. No. at the Sample Information screen, the system will find out if the admission No. has been existed already. If so, the patient information corresponding to the admission No. will be obtained automatically.</p> <p>Refer to 4.1.1 Sample Information for details.</p>

Parameter		Description
Auto Rerun		When selected, it means the analyzer will judge whether auto rerun is necessary based on the conditions listed below. The following conditions are only available when this option is selected.
Above Calibrator	Strongest	When selected, it means the analyzer will rerun the sample automatically if its response is beyond that of the largest-concentration calibrator.
Linearity Exceeded	Limit	When selected, it means the analyzer will rerun the sample automatically if its reaction curve is beyond the linearity limit.
Linearity Exceeded	Range	When selected, it means the analyzer will rerun the sample automatically if its result is beyond the high limit of the linearity range.
Substrate Depleted		When selected, it means the analyzer will rerun the sample automatically if the substrate ran out during running.
		It applies to the Kinetic or Fixed-time method only.
Prozone		When selected, it means the analyzer will re-request the sample automatically if the prozone was found during running.
No Balance Point		When selected, it means the analyzer will rerun the sample automatically if no balance point was detected during running.
		It applies to the Endpoint method only.
Before Testing		It refers to the times of auto-washing performed before testing.
		Selecting Enhance means to wash with wash solution.
After Testing		It refers to the times of auto-washing performed after testing.
		Selecting Enhance means to wash with a wash solution.



NOTE

If **Auto QC** on the **System** screen is selected and **QC Interval** on the **Test** screen is not 0, the analyzer will automatically rerun QC tests among sample tests.

For the **Dilution Ratio** and **Sample Volume** fields, besides the conditions mentioned above, you must also guarantee the diluted sample is no less than 180µl and no more than 450µl.

Please set a suitable value for **Reagent Alarm Limit** so that the analyzer can alert you about insufficient reagents in time.

Enhanced wash means washing the probe and mixing bar using wash solution.

The following table introduces the buttons on the Basic screen.

Button	Function
Restore	Click this button to set all parameters on the screen to default values.
OK	After clicking Restore or setting parameters, click this button to save the settings.
Cancel	After clicking Restore or setting parameters, click this button to ignore the settings.

4.16.1.2 ISE

The ISE screen, as shown in Figure 4-71, is where you can set auto calibration, wash mode and pump calibration mode.

Figure 4-71 ISE Screen

The following table explains the parameters on the screen.

Parameter		Description
Wash When Started Up		When selected, it means the ISE electrodes will be washed when the analyzer is started up.
Wash When Shut Down		When selected, it means the ISE electrodes will be washed when the analyzer is shut down.
Wash After 50 Sample Runs		When selected, it means the ISE electrodes will be washed when 50 samples are analyzed.
Auto Calibrate for		When selected, it means an ISE calibration will be run automatically for the specified interval. You should enter calibration interval in the following edit box. The interval should be within 1-8h.
Calibrate Pumps When Started Up		When selected, it means the peristaltic pumps will be calibrated when the analyzer is started up.
Calibrate Pumps When Shut Down		When selected, it means the peristaltic pumps will be calibrated when the analyzer is shut down.

The following table introduces the button on the screen.

Button	Function
Restore	Click this button to restore default settings of all options.
OK	Click this button to save your settings.
Cancel	Click this button to cancel your settings.

4.16.1.3 Bar Code

The **Bar Code** screen, as shown in Figure 4-72, is where you can set parameters and rules for both sample and reagent bar code.

Figure 4-72 Bar Code Screen

System		Hospital		User		Print																																																																																													
Basic		ISE		Bar Code		LIS		Dictionary																																																																																											
<div> <div> Sample Bar Code <table border="1"> <thead> <tr> <th>Code Rules</th> <th>Start</th> <th>Length</th> <th>Symb.</th> <th>Check</th> </tr> </thead> <tbody> <tr> <td>All</td> <td>1</td> <td>10</td> <td><input checked="" type="checkbox"/> CODE128</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>STAT</td> <td></td> <td></td> <td><input checked="" type="checkbox"/> CODE39</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Test Date</td> <td></td> <td></td> <td><input checked="" type="checkbox"/> CODABAR</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Sample ID</td> <td></td> <td></td> <td><input checked="" type="checkbox"/> ITF</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Sample Type</td> <td></td> <td></td> <td><input checked="" type="checkbox"/> UPC/EAN</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Profile No.</td> <td></td> <td></td> <td><input checked="" type="checkbox"/> CODE93</td> <td><input checked="" type="checkbox"/></td> </tr> </tbody> </table> </div> <div> <input checked="" type="checkbox"/> Sample Barcode <input type="checkbox"/> Extract Information </div> </div>										Code Rules	Start	Length	Symb.	Check	All	1	10	<input checked="" type="checkbox"/> CODE128	<input checked="" type="checkbox"/>	STAT			<input checked="" type="checkbox"/> CODE39	<input checked="" type="checkbox"/>	Test Date			<input checked="" type="checkbox"/> CODABAR	<input checked="" type="checkbox"/>	Sample ID			<input checked="" type="checkbox"/> ITF	<input checked="" type="checkbox"/>	Sample Type			<input checked="" type="checkbox"/> UPC/EAN	<input checked="" type="checkbox"/>	Profile No.			<input checked="" type="checkbox"/> CODE93	<input checked="" type="checkbox"/>	<div> <div> Reagent Bar Code <table border="1"> <thead> <tr> <th>Code Rules</th> <th>Start</th> <th>Length</th> <th>Symb.</th> <th>Check</th> </tr> </thead> <tbody> <tr> <td>All</td> <td>1</td> <td>17</td> <td><input checked="" type="checkbox"/> CODE128</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Test No.</td> <td>1</td> <td>3</td> <td><input checked="" type="checkbox"/> CODE39</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Test Name</td> <td></td> <td>0</td> <td><input checked="" type="checkbox"/> CODABAR</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Rgt Type</td> <td>5</td> <td>1</td> <td><input type="checkbox"/> ITF</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Bottle No.</td> <td>14</td> <td>4</td> <td><input checked="" type="checkbox"/> UPC/EAN</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Bottle Type</td> <td>4</td> <td>1</td> <td><input checked="" type="checkbox"/> CODE93</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Lot No.</td> <td>10</td> <td>4</td> <td></td> <td></td> </tr> <tr> <td>Exp. Date</td> <td>6</td> <td>4</td> <td></td> <td></td> </tr> </tbody> </table> </div> <div> <input checked="" type="checkbox"/> Reagent Barcode <input type="checkbox"/> Extract Information </div> </div>										Code Rules	Start	Length	Symb.	Check	All	1	17	<input checked="" type="checkbox"/> CODE128	<input checked="" type="checkbox"/>	Test No.	1	3	<input checked="" type="checkbox"/> CODE39	<input checked="" type="checkbox"/>	Test Name		0	<input checked="" type="checkbox"/> CODABAR	<input checked="" type="checkbox"/>	Rgt Type	5	1	<input type="checkbox"/> ITF	<input checked="" type="checkbox"/>	Bottle No.	14	4	<input checked="" type="checkbox"/> UPC/EAN	<input checked="" type="checkbox"/>	Bottle Type	4	1	<input checked="" type="checkbox"/> CODE93	<input checked="" type="checkbox"/>	Lot No.	10	4			Exp. Date	6	4		
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NOTE:

When initialized, the system checks sample or reagent bar code reader is equipped. Related options on Bar Code screen will not be available if the sample or reagent bar code reader is not configured.

The following table explains parameters of sample bar code on the **Bar Code** screen.

Parameter	Description
Start	Start position of related item in the entire sample bar code.
Length	Total length of related item in the entire sample bar code.
All	Entire sample bar code. It should be within 3-27.
STAT	STAT sample or not. It should be 0 or 1 digit. Routine is represented by 0 and STAT by 1.
Test Date	Date when sample is analyzed. It should be 0 or 6 digits. e.g. 071012. It means October 12 th , 2007.
Sample ID	Sequence number of sample. It should be 0, 3 or 4 digits. Sample ID will not be included when sample information is downloaded from the LIS host.
Sample Type	Type of sample. It should be 0 or 1 digit. e.g. Serum (0), plasma (1), urine (2), other (3).
Profile No.	No. of profile. It should be 0, 2-4 digits. e.g. If profile No. of liver function is 2, then '002' stands for liver function.
Sample Barcode	When selected, it means the sample bar code reader is enabled. If a sample bar code reader is installed on the analyzer, this option is selected by default.
Extract Information	When selected, the system will analyze sample information based on the scanned bar code. For instance, if sample ID and test date are set for sample bar code, the analyzer will analyze the bar code and fill the obtained sample ID and test date into sample information.
Symb.	The system provides six symbologies, which are Code128, Code39, Codabar, ITF, UPC/EAN and Code93. Code128 is selected by default.
Check	Check digit. It means whether check information for related item is needed. The check box is not ticked by default.

The following table explains parameters of reagent bar code on the **Bar Code** screen.

Parameter	Description
Start	Start position of related item in the entire sample bar code.

Parameter	Description
Length	Total length of related item in the entire sample bar code.
All	Entire sample bar code. It should be within 15-30.
Test No.	Unique number of test assigned by the system. It should be 0 or 2-4 digits. e.g. '001' indicates the test whose number is 1.
Test Name	Name of test. It should be within 0-10 digits.
Rgt Type	Type of reagent. It should be 1 digit. e.g. R1 is represented by 1 and R2 by 2.
Bottle No.	No. of reagent bottle. It should be 3-5 digits.
Bottle Type	Type of reagent bottle. It should be 1-3 digits. e.g. The system can hold two types of reagent bottles: 20ml and 40ml, which are respectively indicated by 1 and 2.
Lot No.	Lot No. of reagent. It should be 3-5 digits.
Exp. Date	Expiration date of reagent. It should be 4, 6 or 8 digits. e.g. 20071012 means October 12 th , 2007; 071012 means October 12 th 2007; 0710 means October 2007;
Reagent Barcode	When selected, it means the reagent bar code reader is enabled. If a reagent bar code reader is installed on the analyzer, this option is selected by default.
Extract Information	When selected, the system will analyze reagent information based on the scanned bar code. For instance, if test No. and reagent type are set for reagent bar code, the analyzer will analyze the bar code and fill the obtained test No. and reagent type into reagent information.
Symb.	The system provides six symbologies, which are Code128, Code39, Codabar, ITF, UPC/EAN and Code93. Code128 is selected by default.
Check	Check digit. It means whether check information for related item is needed. The check box is not ticked by default.

The following table introduces the buttons on the screen.

Button	Function
Restore	Click this button to restore default settings for all options.
OK	Click this button to save your settings.
Cancel	Click this button to cancel your settings.

4.16.1.4 LIS

The **LIS** screen, as shown in Figure 4-73, is where you can set parameters regarding LIS communication.

Figure 4-73 LIS Screen

Test	Code On LIS
ALT	
CREA	
TBIL	
GLU	
GGT	
UREA	
TP	
AST	
TC	
P	
ALB	
IGA	
ALP	
CA-III	
DBIL	
CK	
AMY	
LDHL	

The following table explains the parameters on the screen.

Parameter	Description
Enable LIS	Only when Enable LIS is selected, you can proceed to the following settings.
LIS Host IP	IP address of LIS host to which the analyzer will be connected.
Port	Communication port of the LIS host.
Bidirectional Mode	When selected, it means the analyzer can send test results to or download sample information from the LIS host.
Send Results after Each Sample Run	When selected, it means the analyzer will send test results to LIS when each sample is analyzed.
Connect to LIS When Started Up	When selected, it means the analyzer will connect to LIS according to the IP address and communication port you enter.
Sending Timeout Limit	It refers to the time limit for sending each test result to LIS. It should be within 10-20s.

Parameter	Description	
Receiving Limit	Timeout	It refers to the time limit for receiving each sample from LIS. It should be within 10-20s, and is only available when Bidirectional Mode check box is selected.
Response Limit	Timeout	It refers to the time limit for LIS host to response. It should be within 10-20s.
In Case of Existing Samples	Existing	When a newly-downloaded sample already exists, you can: <ul style="list-style-type: none"> ■ Neglect: The original sample remains and the newly downloaded sample is neglected; ■ Add: The requested tests in original sample remain, and the tests of the new sample are added to the original one. ■ Overwrite: No matter if original sample is finished or not, it is deleted and replaced by the new sample.
Test Correspondence		Test name and No. on LIS may be different from that on the system. In order to ensure tests are requested for intended samples, you should relate the tests on LIS and system using correspondence code. This area includes two fields: Test and Code on LIS . The code on LIS means the code of the test used on LIS host. You can enter it in the Code on LIS column. The code you enter should be of string type and have 0-20 characters.

The following table introduces the buttons on the screen.

Button	Function
Restore	Click this button to set all parameters on the screen to default values.
OK	After clicking Restore or setting parameters, click this button to save the settings.
Cancel	After clicking Restore or setting parameters, click this button to ignore the settings.
Connect	Click this button to connect the analyzer to LIS host according to your settings above.
Disconnect	Click this button to disconnect the analyzer from LIS host.

4.16.1.5 Dictionary

The **Dictionary** screen, as shown in Figure 4-74, is where you can set the data dictionary of the analyzer, such as sample type, result unit and so forth.

Figure 4-74 Dictionary Screen

Name	Description
Serum	Serum
Plasma	Plasma
Urine	Urine
Other	Other

The following table introduces the buttons on the screen.

Button	Function
Restore	After selecting a data group from Data Group , click this button to clear all the new data pieces and adopt the default ones for the selected data group.
Add	After selecting a data group from Data Group , click this button to add a new data piece to the selected group.
Delete	Click this button to delete a used-defined data piece of selected Data Group . The following dialog box pops up.

Click **OK** to delete the selected data piece; click **Cancel** to abort the deletion.

OK	After clicking the Restore button, or modifying a data piece of a data group, click this button to save the settings.
Cancel	After clicking the Restore button, or modify a data piece of a data group, click this button to ignore the settings.



NOTE

The data pieces given by the analyzer (those in the data group **Description** not included) cannot be modified or deleted.

You can modify the data pieces given by the analyzer in the data group **Description**, which includes **Normal**, ↑, ↓. You can even change them to void but cannot delete them.

4.16.2 Hospital

The **Hospital** screen, as shown in Figure 4-75, is where you can set the hospital name, departments and doctor information.

Figure 4-75 Hospital Screen

The screenshot shows the 'Hospital' screen with the following elements:

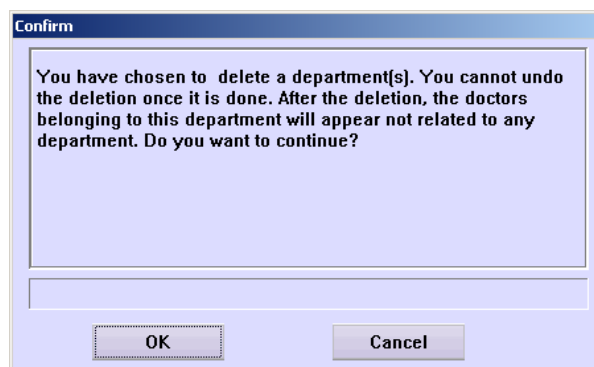
- Tabbed interface: System, **Hospital**, User, Print.
- Input fields: Hospital, Address.
- Tables:
 - Department table with columns: No., Department.
 - Doctor table with columns: No., Doctor, Department.
- Form fields: Department, Number.
- Buttons: Add Dept., Delete Dept., Add Doctor, Delete Doctor, OK, Cancel.

The following table explains the parameters on the screen.

Parameter	Description
Hospital	Name of the hospital.
Address	Address of the hospital
Department	Name of the department.
Number	Number of doctors in the department. It cannot be edited but obtained by the system according to the doctors of the department.
Doctor	Name of doctor.
Department	Department to which the doctor belongs.

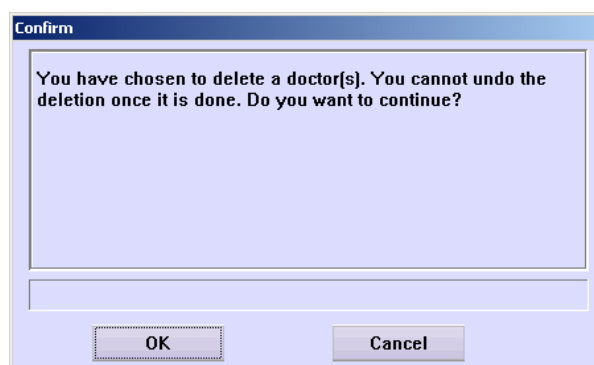
The following table introduces the buttons on the screen.

Button	Function
Add Dept.	Click this button to add a new department.
Delete Dept.	After selecting a department from the department list, click this button to pop up the following dialog box.



Click **OK** to delete the selected department; click **Cancel** to abort the deletion.

Add Doctor	After selecting a department from the department list, click this button to add a new doctor to the selected department.
Delete Doctor	After selecting a doctor in the doctor list, click this button to pop up the following dialog box.



Click **OK** to delete the selected doctor; click **Cancel** to abort the deletion.

OK	After modifying the hospital name, department name or doctor information, click this button to save the modification.
Cancel	After modifying the hospital name, department name or doctor information, click this button to ignore the modification.

4.16.3 User

The **User** screen, as shown in Figure 4-76, is where you can set user authority.



NOTE

Only users of the administrator group can operate the screen.

[illegible]

Parameter	Description
Authority	Authorities of a user to use the analyzer.
Group	Name of user group.
User	Name of user.
Password	Password of user.
Confirm	Confirming password of user. It must be same as the password above.
Doctor	Name of doctor.
Group	User group to which the doctor belongs. Void means the doctor does not belong to any group.

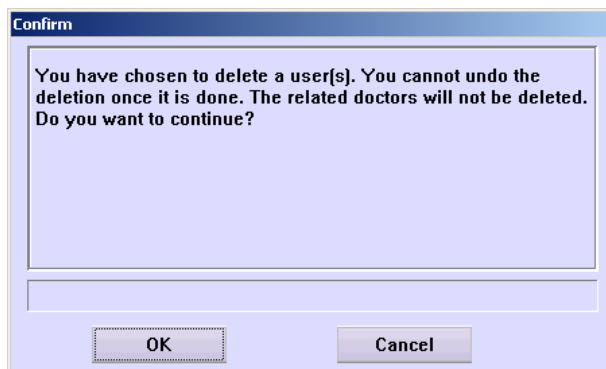


“Admin” is the default user who belongs to the administrator group. Its name cannot be changed.

If a user group has none of the authorities as shown on the screen, the user group can perform basic operations except for the ones within the authorities as shown on the screen.

The following table introduces the buttons on the screen.

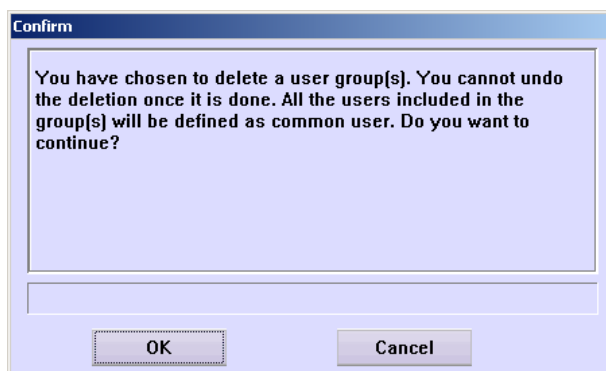
Button	Function
Add User	Click this button to add a new user. We recommend you to set a password immediately for the user you have added. For detailed instructions of setting user information, refer to the following text To Set User Information .
Delete User	After selecting a user in the user list, click this button to pop up the following dialog box.



Click **OK** to delete the selected user; click **Cancel** to abort the deletion.

Add Group	Click this button to add a new user group to the user group list. You should set authorities for the newly-added user group, which has only basic authorities and none of the ones as shown on the screen. For detailed instructions of setting authorities of user groups, refer to the following text To Set User Group Information .
-----------	--

Delete Group	After selecting a user group in the user group list, click this button to pop up the following dialog box.
--------------	--



Click **OK** to delete the selected user group; click **Cancel** to abort the deletion.

OK	Click this button to save the modification to user group information or user information. For detailed instructions of setting user group information, refer to the following text To Set User Group Information . For detailed instructions of setting user information, refer to the following text To Set User Information .
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Button	Function
Cancel	<p>Click this button to ignore the modification to user group information or user information.</p> <p>For detailed instructions of setting user group information, refer to the following text To Set User Group Information .</p> <p>For detailed instructions of setting user information, refer to the following text To Set User Information.</p>

To Set User Group Information

- 1 Select a user group in the user group list.
- 2 If you don't need to modify the user group name, proceed to the next step.
Otherwise, modify the user group name in the **Group** edit box.
- 3 If you don't need to modify the authorities of a user group, proceed to the next step.
Otherwise, select an authority in the authority list. You can select one or more pieces at one time.
- 4 If you want to save the settings, click **OK**.

To Set User Information

- 1 Click **Add User** to add a new user or select a user from the user list.
- 2 Set the parameters like **User**, **Password**, **Doctor** and **Group** as you need.
- 3 If you want to save the settings, click **OK**.

4.16.4 Print

The **Print** screen is where you can set the parameters regarding printing reports.

At the **Print** screen, there are two tabs:

- **General**
- **Template**

4.16.4.1 General

Figure 4-77 General Screen

No.	Test	Test type
1	ALT	Routine
2	CREA	Routine
3	TBIL	Routine
4	GLU	Routine
5	GGT	Routine
6	UREA	Routine
7	TP	Routine
8	AST	Routine
9	TC	Routine
10	P	Routine
11	ALB	Routine
12	IGA	Routine
13	ALP	Routine
14	CA-III	Routine
15	DBIL	Routine
16	CK	Routine
17	AMY	Routine
18	LDHL	Routine
19	TG	Routine
20	UA	Routine
21	HDI	Routine

The following table explains the parameters on the screen.

Parameter	Description
Print by Template	Print the patient report by the template.
Print by	<p>You can select to print one or more reports on one page.</p> <p>Single means you can print only one report on each page;</p> <p>Multiple means you can continue printing reports on the page if the remaining space is enough for one or more reports;</p> <p>Split means you can continue printing other reports on the page no matter whether the remaining space is enough or not.</p>
Type	<p>Type of printing paper you wish to use.</p> <p>It is only available when you select Print by (Single/Multiple/Split).</p>
Width	<p>Width of printing paper. The unit is mm.</p> <p>It is only available when you select Print by.</p>
Height	<p>Height of printing paper. The unit is mm.</p> <p>It is only available when you select Print by.</p>
Printer Setup	Select a printer.

The following table introduces the buttons on the screen.

Button	Function
Set as Default Printer	After selecting a printer, click this button to set it as the default one.
Home	After selecting a test, click this button to set it as the first one appearing on the patient report.
Up	After selecting a test, click this button to move it to the previous position on the patient report.
Down	After selecting a test, click this button to move it to the next position on the patient report.
End	After selecting a test, click this button to set it as the last one appearing on the patient report.
Restore Default	Click this button to restore all options to factory default settings.
OK	After clicking the Restore Default button or setting the printing parameters, click this button to save the settings.
Cancel	After clicking the Restore Default button or setting the printing parameters, click Cancel to ignore the settings.

4.16.4.2 Template

The **Template** screen, as shown in Figure 4-78, is where you can set template for printing various reports and curve diagrams.

Figure 4-78 Template Screen

The screenshot shows the 'Template' screen within a software application. At the top, there are tabs for 'System', 'Hospital', 'User', and 'Print'. The 'Print' tab is selected. Below this, there are sub-tabs for 'General' and 'Template'. The 'Template' sub-tab is active, displaying a grid of settings. Each setting consists of a text label, a button, and two smaller buttons labeled 'Def.' and 'Prev.'. The settings are organized into two columns. The first column includes 'Report for Patient', 'Report by Test', 'Results Statistics', 'Worklist by Test', 'Worklist by Sample', 'Fee Statistics', 'Charges Statistics', 'Workload for Sender', 'Workload for Tester', 'Rgt. Blk.Reac.Curve', 'Samp. Blk.Reac.Curve', 'Sample Reac. Curve', and 'Reaction Data'. The second column includes 'QC Results', 'Real-time QC Plot', 'QC Reaction Curve', 'Other QC Plot', 'Calib. Reac. Curve', 'Default Calib. Para.', 'All Calib. Para.', 'Calibration Curve', 'Reagent Blank Trend', 'Result Trend Curve', 'QC Data Summary', 'QC Statistics', and 'ISE Calib. Para.'. At the bottom of the screen, there are four buttons: 'Restore Default', 'OK', 'Cancel', and 'Print Task'.

The following table introduces the buttons on the screen.

Button	Function
Template Buttons	Click these buttons to select .bcr files as the templates.
Def.	Click this button to adopt the default template.
Prev.	Click this button to preview the current template.
Restore Default	Click to adopt the default templates for all reports, curve diagrams and charts, etc.
OK	After clicking the template button, Def. or Restore Default button, click this button to save the settings.
Cancel	After clicking the template button, Def. or Restore Default button, click this button to ignore the settings.

4.17 Maintenance

Click **Maintenance** to enter the screen where you can maintain the analyzer and data.

The following sections introduce the **Maintenance** screen by tab.

4.17.1 Daily Maintenance

The **Daily Maint** screen, as shown in Figure 4-79, is where you can maintain the analyzer generally.



CAUTION

Do not perform any maintenance actions unless you are certain the analyzer is not testing.

When aligning, you can send a new instruction only after the current one has been completed. Otherwise, warning messages will be given probably. If you mis-send a new instruction, you can send it again after the current one has been completed and at least 30 seconds have been passed after the last sending.

Figure 4-79 Daily Maintenance Screen

Daily Maint	ISE	Log	Import/Export	Alignment																														
System Status																																		
Reaction Temp.	<input type="text"/>	Dark Current/Background <table border="1"> <thead> <tr> <th></th> <th>Dark Current</th> <th>Background</th> </tr> </thead> <tbody> <tr> <td>340</td> <td><input type="text" value="83"/></td> <td><input type="text" value="44765"/></td> </tr> <tr> <td>405</td> <td><input type="text" value="83"/></td> <td><input type="text" value="44765"/></td> </tr> <tr> <td>450</td> <td><input type="text" value="83"/></td> <td><input type="text" value="44765"/></td> </tr> <tr> <td>510</td> <td><input type="text" value="83"/></td> <td><input type="text" value="44765"/></td> </tr> <tr> <td>546</td> <td><input type="text" value="83"/></td> <td><input type="text" value="44765"/></td> </tr> <tr> <td>578</td> <td><input type="text" value="83"/></td> <td><input type="text" value="44765"/></td> </tr> <tr> <td>630</td> <td><input type="text" value="83"/></td> <td><input type="text" value="44765"/></td> </tr> <tr> <td>670</td> <td><input type="text" value="83"/></td> <td><input type="text" value="44765"/></td> </tr> <tr> <td>Reference</td> <td><input type="text" value="1"/></td> <td><input type="text" value="1"/></td> </tr> </tbody> </table>				Dark Current	Background	340	<input type="text" value="83"/>	<input type="text" value="44765"/>	405	<input type="text" value="83"/>	<input type="text" value="44765"/>	450	<input type="text" value="83"/>	<input type="text" value="44765"/>	510	<input type="text" value="83"/>	<input type="text" value="44765"/>	546	<input type="text" value="83"/>	<input type="text" value="44765"/>	578	<input type="text" value="83"/>	<input type="text" value="44765"/>	630	<input type="text" value="83"/>	<input type="text" value="44765"/>	670	<input type="text" value="83"/>	<input type="text" value="44765"/>	Reference	<input type="text" value="1"/>	<input type="text" value="1"/>
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Reference	<input type="text" value="1"/>	<input type="text" value="1"/>																																
Preheat Temp.	<input type="text"/>																																	
Waste Tank	<input type="text"/>																																	
Deionized Water	<input type="text"/>																																	
Printer	Printer is not installed																																	
Light Intensity	<input type="text" value="68%"/>																																	
Unit Status																																		
Main Unit	<input type="text"/>																																	
Reaction Unit	<input type="text"/>																																	
Sample Unit	<input type="text"/>																																	
Reagent Unit	<input type="text"/>																																	
Temperature Unit	<input type="text"/>																																	
Mixing Unit	<input type="text"/>																																	
<input type="button" value="Startup Check"/> <input type="button" value="Recover"/> <input type="button" value="Wash"/> <input type="button" value="Enhanced"/> <input type="button" value="Dark Current"/> <input type="button" value="Reset"/>																																		

The **Daily Maint** screen can display not only real-time status of each unit of the analyzer, but also the dark current and background of every wavelength.

Dark current refers to the AD output of the wavelength when the lamp of the photometer is switched off. Background refers to the AD output of the wavelength when there is no cuvette in the optical path.

The following table introduces the buttons on the screen.

Button	Function
Startup Check	Click this button to perform startup check again after alignment or the connection between the analyzing unit and the operation unit failed.
Recover	When failure occurs, click this button to try to recover the analyzer to normal state.
Wash	Click this button to wash the probe and the mixing bar with deionized water.
Enhanced	Click this button to wash the probe and the mixing bar with a wash solution.
Dark Current	Click this button to test the dark current and display the results.
Reset	Click this button to reset all mechanical parts of the analyzer.

4.17.2 ISE

The ISE screen, where you can view status of and align ISE components, include the following two.

- **Daily Maint**
- **Maint Record**

The following sections introduce the **ISE** screen by subtab.

4.17.2.1 Daily Maintenance

The **Daily Maint** screen, as shown in Figure 4-80, is where you can view status of reagent module and maintain the ISE module.

Figure 4-80 Daily Maint Screen

The screenshot shows the 'Daily Maint' screen with the 'ISE' subtab selected. The screen is divided into two main sections. On the left, under 'Reagent Module Information', there are five input fields: 'Exp. Date', 'Volume', 'Lot No.', 'Install Date', and 'Inventory'. Below these fields is a 'Search' button. On the right, there is a vertical column of buttons: 'Purge A', 'Purge B', 'Pump Cal', 'Calibration', 'Clean', 'Maintenance', 'Bubble Cal', 'Purge Comb', and 'Recover'. The 'Purge Comb' button has a small numeric input field next to it containing the value '1'. At the bottom of the screen, there is a long, empty text input field.

The following table explains the parameters on the screen.

Parameter	Description
Exp. Date	Expiration date of the reagent.
Volume	Total amount of the reagent.
Lot No.	Lot No. of the reagent.
Install Date	Date when the reagent module is installed.
Inventory	Remaining volume of the reagent.

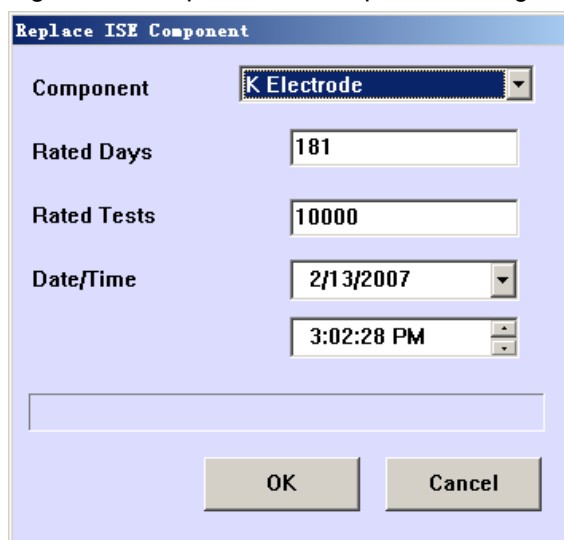
The following table introduces the buttons on the screen.

Button	Function
Search	Click this button to search the status information of the reagent module. The searched contents will be displayed in corresponding edit boxes.
Purge A	Click this button to purge Calibrant A solution through the tubing from the reagent module to the ISE module.
Purge B	Click this button to purge Calibrant B solution through the tubing from the reagent module to the ISE module.
Pump Cal	Click this button to calibrate the peristaltic pumps of the ISE module.

To Replace ISE Component

On the **Maint Record** screen, select a component and click **Replace**. The following dialog box is displayed.

Figure 4-82 Replace ISE Component Dialog Box



The following table explains the parameters on the screen.

Parameter	Description
Component	Select a component you want to replace.
Rated Days	Maximum days that the component can work after being replaced. When the actual working day exceeds this limit, the system will remind you of replacement in the Comments column on Maint Record screen.
Rated Tests	Maximum number of tests that the component can work for after being replaced. When the actual tests number exceeds this limit, the system will remind you of replacement in the Comments column on Maint Record screen.
Date/Time	Set date and time when the component is replaced.

The following table introduces the buttons on the screen.

Button	Function
OK	Click this button to save the maintenance information.
Cancel	Click this button to cancel the maintenance information.

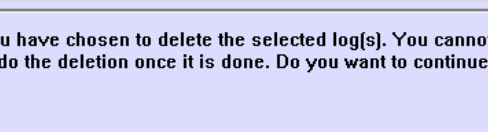
4.17.3 Log

The **Log** screen, as shown in Figure 4-83, is where you can search and delete the alarm messages. You can take corresponding actions according to the alarm messages.

For detailed information about troubleshooting, refer to **6Troubleshooting**.

[illegible]

The following table introduces the buttons on the screen.

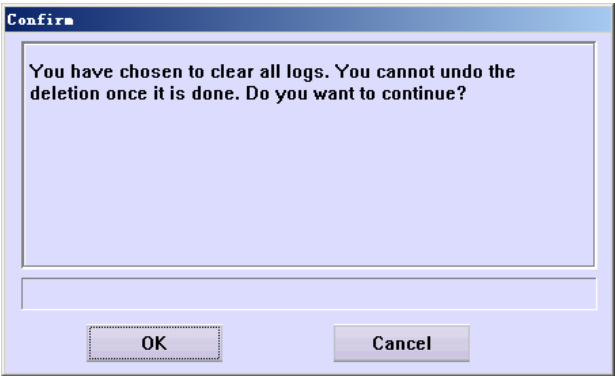


Confirm

You have chosen to delete the selected log(s). You cannot undo the deletion once it is done. Do you want to continue?

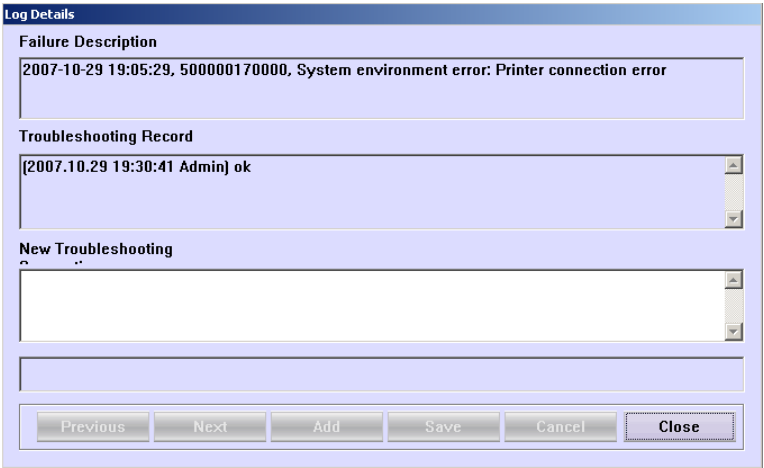
OK Cancel

Button	Function
Clear	Click this button to pop up the following dialog box.



Click **OK** to remove all logs currently displayed from the database and to clear the **Log List**; click **Cancel** to abort the deletion.

Details	Click this button to pop up the following dialog.
---------	---



After writing a warning message in the New Troubleshooting dialog, click **Add** and then click **Save** to save the message; or click **Cancel** to abort the addition.

To Search Error Logs

The **Search Error Logs** dialog box, as shown in Figure 4-84, is where you can set the log searching conditions.

Figure 4-84 Search Error Logs Dialog Box

The following table explains the parameters of the dialog box.

Parameter	Description
Date	Date of log. The first edit box is start time, and the second is end time.
Level	Level of logs. All refers to logs of all levels; Equal , Higher or Lower refer to the logs with level equal to, higher than or lower than the one set in the Error Level field.
Units	Select a unit(s) to which the logs you want to search correspond.

The following table introduces the buttons of the dialog box.

Button	Function
OK	After setting the conditions, click this button to confirm and display the qualified logs at the Log screen.
Cancel	Click this button to abort the searching.

4.17.4 Import/Export

The **Import/Export** screen, as shown in Figure 4-85, is where you can import or export parameters and test results.



CAUTION

You can import or export parameters and test results when the analyzer is not testing.

Figure 4-85 Import/Export Screen

The screenshot shows the 'Import/Export' tab selected in a software interface. The interface is divided into several sections:

- Tabs:** Daily Maint, ISE, Log, **Import/Export**, Alignment.
- Calibration:** Two date dropdowns (both set to 2008-04-22) and checkboxes for Calibrator, Calibration Settings, Calibration Parameters, and Calibration Data.
- QC:** Two date dropdowns (both set to 2008-04-22) and checkboxes for Control, QC Settings, and QC Data.
- Sample Analysis:** Two date dropdowns (both set to 2008-04-22) and checkboxes for Patient Information, Sample Information, Test Results, and Reagent.
- System:** Checkboxes for Department, Doctor, and User.
- Test Information:** Checkboxes for Test Parameters, Reference Range, Calculation Test, Carryover, Profile, Off-system Test, Tests in Profile, and ISE Analyte.
- Tests:** A table with a checkbox 'Related to Selected Test(s)' and a list of tests:

ALB	ACP	ALP	ALT
AMY	AST	DBIL	TBIL
BUN	Ca-O	Ca-A	CO2
Chol	Creat	CK	CK-MB
CRP	FRUC	GGT	GLU-HK
GLU-OX	G6PD	IRON	HbA1c
HDL-C	LAC	LDH	LDL-C
- Export or import carryover information:** A section with buttons for Test Update, Import, Export, and Select All.



NOTE

This analyzer automatically backs up its parameters and test results. Exporting data refers to saving some data to a file temporarily for transmitting or updating purposes. It is not the same as backing up the database. We recommend this exporting function not be used unless necessary.

The imported data will overwrite the corresponding data in the analyzer's database. Before importing data, ensure the corresponding data is exported to another file. We recommend this importing function not be used unless necessary.

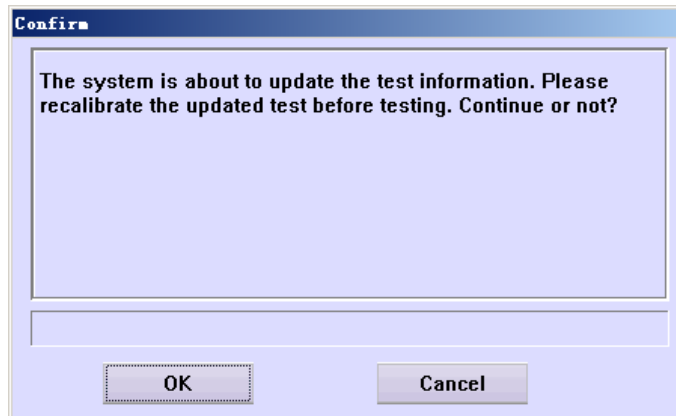
The file used for exporting or importing data should be a .SHD file.

The **Import/Export** screen displays the options you can import or export. The drop-down list boxes in the screen are used to set date ranges, including start time and end time.

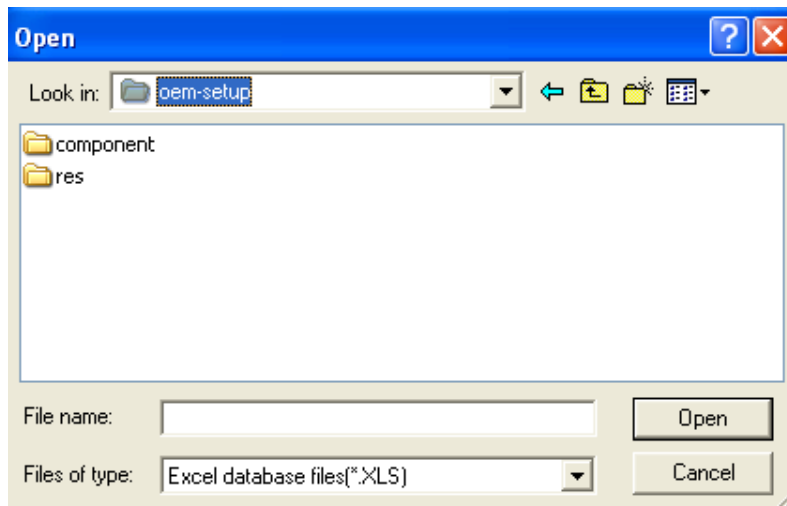
When importing or exporting test-related information, selecting **Related to Selected Test(s)** means to importing or exporting that of selected test(s) in the **Tests** field only. Mark the check box on the right of **Tests** field to select or deselect all the tests.

The following table introduces the buttons on the screen.

Button	Function
Test Update	Click this button to pop up the following dialog box.



Click **Cancel** to abort importing; click **OK** to continue importing. The following dialog box will show up.



Select the file to be imported and click **Open** to import the selected file.

Note:

1. The imported file should be a specified excel file.
2. If test with the same No. or name already exists in the software, there might be two consequences:
 - If the test already in the software is imported through test update, it will be overwritten by imported test,
 - If the test already in the software is input manually, the importing will fail.

Import	After selecting options, click this button to import them from the selected .SHD file.
Export	After selecting options, click this button to export them to the selected .SHD file.
Select All	Click this button to select all options on the screen and the button will change into None ; click None to deselect the selected options.

4.17.5 Alignment

The **Alignment** screen is where you can maintain and align the analyzer.



CAUTION

Do not perform any maintenance actions unless the analyzer is not testing.

When aligning, you can send a new instruction only after the current one has been completed. Otherwise, warning messages will be given probably. If you mis-send a new instruction, you can send it again after the current one has been completed and at least 30 seconds have been passed after the last sending.



NOTE

You are recommended to click the **Startup Check** button on the **Daily Maint** screen to perform the startup check after aligning. Refer to **4.17.1 Daily Maintenance** for details.

There are two tabs on the **Alignment** screen:

- **System**
- **Motion**

The following sections introduce the **Alignment** screen by tab.

4.17.5.1 System

The **System** screen, as shown in Figure 4-86, is where you can maintain the analyzer.

Figure 4-86 System Screen

The screenshot shows the 'System' screen within the 'Alignment' tab. At the top, there are navigation tabs: 'Daily Maint', 'ISE', 'Log', 'Import/Export', 'Alignment', and 'Motion'. The 'System' tab is selected. Below the tabs, there is a 'Unit' dropdown menu set to 'Main Unit'. The main area is divided into several sections:

- Instructions:** A grid of buttons including 'System Status', 'Syringe Status', 'Self-check Result', 'Temperature', 'Reset Result', 'Target Temp.', 'Pre. Instr. Error', 'Lamp Status', 'Pre. Instr. Result', 'Disk Status', 'Probe Arm Hor.', 'Mixing Bar Hor.', 'Probe Arm Ver.', and 'Mixing Bar Ver.'.
- System:** Buttons for 'Handshake', 'Reset', and 'Shut Down'.
- Reset:** A 'Reset' button.
- Liquid Level:** A 'Position' dropdown and a 'Liquid Level' button.
- Photoelectrical:** A 'Position' dropdown and a 'Normal Data' button.

A 'Clear' button is located at the bottom right of the screen.

The following table explains the parameters on the screen.

Parameter	Description
Unit	Select a unit you want to maintain.
Position	Enter a position No. to search relevant parameters.

The following table introduces the buttons on the screen.

Button	Function
System Status	Click this button to send an instruction to check the status of the specified unit.
Self-check Result	Click this button to send an instruction to check the self-check results of the specified unit.
Reset Result	Click this button to send an instruction to check the mechanical reset result of the specified unit.
Pre. Instr. Error	Click this button to send an instruction to check the previous instruction error.
Pre. Instr. Result	Click this button to send an instruction to check the previous instruction result.
Probe Arm Hor.	Click this button to send an instruction to check the horizontal status of the probe arm.
Probe Arm Ver.	Click this button to send an instruction to check the vertical status of the probe arm.
Syringe Status	Click this button to send an instruction to check the status of the syringe.
Temperature	Click this button to send an instruction to check the temperature of the reaction disk.
Target Temp.	Click this button to send an instruction to check the target temperature of the reaction disk.
Lamp Status	Click this button to send an instruction to check the status of the lamp.
Disk Status	Click this button to send an instruction to check the status of the specified disk.
Mixing Bar Pos.	Click this button to send an instruction to check the position status of the mixing bar.
Handshake	Click this button to send an instruction to shake hand with the specified unit.
Reset	Click this button to send an instruction to reset the specified unit.
Shut Down	Click this button to send an instruction to inform the specified unit of shutdown.
Reset	Click this button to send an instruction to reset the mechanical parts.
Liquid Level	After entering a number in the Position field, click this button to send an instruction to check the fluid level of specified position on the specified unit.

Button	Function
Photo. Data	After entering a number in the Position field, click this button to send an instruction to check the photoelectrical data of the specified position.
Normal Data	After entering a number in the Position field, click this button to send an instruction to check the normal photoelectrical data of the specified position.
Clear	Click this button to remove all instructions displayed in the above window.

4.17.5.2 Motion

The **Motion** screen, as shown in Figure 4-87, is where you can adjust parts of the analyzing unit.

Figure 4-87 Motion Screen

The following table explains the parameter on the screen.

Parameter	Description
Part	Select a part you want to adjust.

The following table introduces the buttons on the screen.

Part	Button	Function
Sample Probe	Above Wash Well	Click this button to send an instruction to move the sample probe to a position above the wash well.
	To Disp. Pos. on Reaction Disk	Click this button to send an instruction to move the sample probe to dispensing position on the reaction disk.

Part	Button	Function
	Above Reaction Disk	Click this button to send an instruction to move the sample probe to a position above the reaction disk.
	Above Sample Disk	Click this button to send an instruction to move the sample probe to a position above the sample disk.
	To Asp. Pos. on Sample Disk	Click this button to send an instruction to move the sample probe to aspirate position on the sample disk.
	Above ISE Sample Entry Port	Click this button to send an instruction to move the sample probe to a position above ISE sample entry port
	To ISE Sample Entry Port	Click this button to send an instruction to move the sample probe to dispensing position in ISE sample entry port.
	Above Diluted Sample Asp. Pos.	Click this button to send an instruction to move sample probe to a position above the diluted sample aspirate position on the reaction disk.
	To Diluted Sample Asp. Pos.	Click this button to send an instruction to move sample probe to diluted sample aspirate position on the reaction disk.
Reagent Probe	Above Wash Well	Click this button to send an instruction to move the reagent probe to position above the wash well.
	To Disp. Pos. on Reaction Disk	Click this button to send an instruction to move the reagent probe to dispensing position on the reaction disk.
	Above Reaction Disk	Click this button to send an instruction to move the reagent probe to a position above the reaction disk.
	Above Reagent Disk	Click this button to send an instruction to move the reagent probe to a position above the reagent disk.
	To Asp. Pos. on Reagent Disk	Click this button to send an instruction to move the reagent probe to aspirate position on the reagent disk.
Mixing Bar	Above Wash Well	Click this button to send an instruction to move the mixing bar to a position above the wash well.
	To Cleaning Pos. in Wash Well	Click this button to send an instruction to move the mixing bar to the cleaning position in the wash well.
	Above Reaction Disk	Click this button to send an instruction to move the mixing bar to a position above the reaction disk.
	To Mixing Pos. on Reaction Disk	Click this button to send an instruction to move the mixing bar to mixing position on the reaction disk.

Part	Button	Function
	Mix for Specified Time	Enter the desired mixing time into the edit box to the right of Time , and then click this button to send an instruction to mix for specified time.
Reaction Disk	Rotate Given Circles to Target Position	After entering the desired numbers into the edit boxes to the right of Circles and Target Position , click this button to send an instruction to rotate the reaction disk for given circles and stop at the specified position.
	Rotate Positions Given	After entering the desired number into the edit box to the right of Positions , click this button to send an instruction to rotate the reaction disk for given positions.
Reagent Disk	Rotate Given Circles to Target Position	After entering the desired numbers into the edit boxes to the right of Circles and Target Position , click this button to send an instruction to rotate the reagent disk for given circles and stop at the specified position.
	Rotate Positions Given	After entering the desired number into the edit box to the right of Positions , click this button to send an instruction to rotate the reagent disk for given positions.
Sample Disk	Rotate Given Circles to Target Position	After entering the desired numbers into the edit boxes to the right of Circles and Target Position , click this button to send an instruction to rotate the sample disk for given circles and stop at the specified position.
	Rotate Positions Given	After entering the desired number into the edit box to the right of Positions , click this button to send an instruction to rotate the sample disk for given positions.
Fluidic System	Clean S. Probe	Select Interior , Exterior or All from the drop-down list box to the left of this button and click it to send an instruction to wash the sample probe with deionized water.
	Clean R. Probe	Select Interior , Exterior or All from the drop-down list box to the left of this button and click it to send an instruction to wash reagent probe with deionized water.
	Clean Mixing Bar	Click this button to send an instruction to wash mixing bar with deionized water.
	S. Syringe Aspirate	After entering the desired number (µl) into the edit box to the right of Vol. (S. Syringe) , click this button to send an instruction to make the sample syringe aspirate the given volume.
	S. Syringe Dispense	After entering the desired number (µl) into the edit box to the right of Vol. (S. Syringe) , click this button to send an instruction to make the sample syringe dispense the given volume.
	S. Syringe Reset	Click this button to send an instruction to reset the sample syringe.

Part	Button	Function
	R. Syringe Aspirate	After entering the desired number (μ l) into the edit box to the right of Vol. (R. Syringe) , click this button to send an instruction to make the reagent syringe aspirate the given volume.
	R. Syringe Dispense	After entering the desired number (μ l) into the edit box to the right of Vol. (R. Syringe) , click this button to send an instruction to make the reagent syringe dispense the given volume.
	R. Syringe Reset	Click this button to send an instruction to reset the reagent syringe.
Lamp	Lamp On	Click this button to send an instruction to turn on the lamp of the photometer.
	Lamp Off	Click this button to send an instruction to turn off the lamp of the photometer.
Other	Download Parameters	Click this button to send an instruction to download parameters.
	Reset Mechanical Parts	Click this button to send an instruction to reset all the mechanical parts of the analyzing unit.
Bar Code Reader	Scan Sample Barcode	Click this button to send an instruction to scan sample bar code.
	Scan Reagent Bar Code	Click this button to send an instruction to scan reagent barcode.
	Laser On	Click this button to send an instruction to turn on laser.
	Laser Off	Click this button to send an instruction to turn off laser.
	Handshake	Click this button to send an instruction to shakehands with bar code reader.
	Reset	Click this button to send an instruction to initiate bar code reader.
Button		Function
Clear		Click this button to remove all instructions displayed in the above window.



CAUTION

Before executing ***To Asp. Pos. on Sample Disk*** or ***To Asp. Pos. on Reagent Disk***, reset the sample/reagent disk or stop it at certain position. Otherwise, it may lead to probe collision.

Before executing ***To Disp. Pos. on Reaction Disk***(for sample and reagent), ***To Diluted Asp. Pos. on Reaction Disk***, ***To Mixing Pos. on Reaction Disk***, or ***Mix for Specified Time***, reset the reaction disk and ensure the reaction disk is stopped at certain position. Otherwise, it may lead to probe or mixing bar collision.

Before operating the reaction disk, ensure the probe and the mixing bar are already away from it. Otherwise, moving disk may bend the probe or the mixing bar.

Before operating the sample/reagent disk, ensure the probe is already away from it. Otherwise, moving disk may bend the probe.



NOTE

If no test is to be run for a long time and you have no intention to exit the operating software, you can turn off the lamp to maximize its service life.

5 *Service and Maintenance*

To ensure reliability, good performance and service life of the system, regular maintenance is required. Follow the instructions given below to maintain the system. Even you're only an operator, it's very important for you to learn this chapter. Your thorough understanding will help you obtain the best performance of the system.

In case of problems beyond your ability or not covered in this chapter, be sure to contact our customer service department or your local distributor.



WARNING

Do not perform any maintenance procedures that are not described in this chapter. Otherwise, system damage and personal injury may be caused. Do not touch the components other than the ones specified in this chapter.

Performing unauthorized maintenance procedures may damage your system, void any applicable warranty or service contract and even cause personal injury.

After performing any maintenance actions or procedures, ensure that the system runs normally.

Most maintenance actions or procedures should be performed after the Power is placed to OFF. For some maintenance actions or procedures, be sure to place the Main Power to OFF first

Do not spill water or reagent on mechanical or electrical components of the system.



BIOHAZARD

Wear gloves and lab coat and, if necessary, goggles during maintaining process.

We recommend the copy of the maintenance log in **5.7 Maintenance Log Sheets** be used to keep the maintenance records.

5.1 Preparation

The following tools, wash solution and ethanol may facilitate your maintenance.

5.1.1 Tools

- Hex wrenches (M1.5, M3 and M4)
- Cross-headed screwdrivers (large, medium and small)
- Tweezers
- Clean cup
- Clean gauze
- Clean cotton swabs
- Clean brush
- Syringe (5-10 ml)
- Rubber gloves

5.1.2 Wash Solution

- Acid: 0.1mol/l hydrochloric acid
- Alkaline: javel water with 0.5% active chlorine.
-



WARNING

Poisonous gas will be produced if acid wash solution is mixed with alkaline wash solution. Do not mix the acid wash solution with the alkaline one.

Some enhanced wash solution may hurt human skins. Exercise caution when using the wash solution. In case your skin or clothes contact them, wash them off with clean water. In case the wash solution spill into your eyes, rinse them with much water and consult an oculist.



CAUTION

We have specified the following wash solutions:

Acid wash solution: 0.1mol/l hydrochloric acid;

Alkaline: javel water with 0.5% active chlorine.

You should dilute the sodium hypochlorite solution at appropriate ratio according to the available chlorine contained in it.

We recommend the acid and alkaline wash solutions be used alternately. For instance, if the acid wash solution is used at current startup, the alkaline one should be used at next startup.

5.1.3 Others

- Water-free ethanol

- Disinfectant

5.2 Daily Maintenance

5.2.1 Checking Remaining Deionized Water



CAUTION

The water must meet requirements of the CAP Type II water.

When placing the deionized water tank, ensure the top of the tank is lower than the bearing platform on which the system is placed.

Ensure the deionized water pickup tube is not blocked, bent, or twisted.

- 1 Place the Power to OFF.
- 2 Check how much deionized water is left in the tank.
If not much, proceed to the next step.

3



CAUTION:

After removing the cap of the deionized water tank (together with the pickup tube, sensor and the filter), place it on a clean table.

Unscrew (counter-clockwise) the tank cap assembly and remove the cap together with the pickup tube, sensor and the filter. Do not detach the cap assembly, otherwise leakage might happen.

- 4 Add deionized water to the tank.
- 5 Screw (clockwise) the cap assembly together with the pickup tube, sensor and the filter back onto the tank until secure.

5.2.2 Emptying Waste Tank



BIOHAZARD

Wear gloves and lab coat and, if necessary, goggles. Dispose of the wastewater in accordance with your local or national guidelines for biohazard waste disposal, and consult the manufacturer or distributor of the reagents for details.



CAUTION

When placing the waste tank, ensure the top of the tank is lower than the bearing platform on which the system is placed.

Ensure the waste tube is over the tank and not blocked, bent, or twisted. A blocked, bent or twisted waste tube may lead to wastewater overflow that may damage the analyzer.

- 1 Place the Power to OFF.

2



BIOHAZARD

After removing the cap of the waste tank (together with the tube and sensor), place it on an appropriate place to avoid infection.

Unscrew (counter-clockwise) the tank cap and remove it together with the waste tube and the sensor from the tank.

- 3 Empty the waste tank.
- 4 Screw (clockwise) the cap (together with the waste tube and the sensor) back onto the tank until secure.

5.2.3 Checking Connection of Deionized Water



CAUTION

When placing the deionized water tank, ensure the top of the tank is lower than the bearing platform of the analyzer.

Ensure the deionized water pickup tube is not blocked, bent, or twisted.

- 1 Place the Power to OFF.
- 2 Check the connections between the two connectors (green and red) marked DEIONIZED WATER on the analyzer and their counterparts.
If no leakage occurs, skip to step 4.
If you see leaks, wipe off the water with clean gauze and proceed to the next step.
- 3 Check whether the connectors are loose.
If not, proceed to the next step.
If yes, unscrew the connector counter-clockwise to remove it and then screw it back on.
- 4 Check the connections between the pickup tubes and their connectors.
If no leakage occurs, proceed to the next step.
If you see leaks, wipe off the water with clean gauze and tighten the connections and proceed to the next step.
- 5 Check the connection between the pickup tube and the tank cap.
If you see leaks, wipe off the water with clean gauze and tighten the pickup tube.
- 6 Check the connection between the pickup tube and the filter. If you see leaks, wipe off the water with clean gauze and tighten the pickup tube.

**NOTE**

If leakage remains after the above operations are finished, please contact our customer service department or your local distributor.

5.2.4 Checking Connection of Waste Water

**BIOHAZARD**

Wear gloves and lab coat and, if necessary, goggles.

Dispose of the used gauze in accordance with your local or national guidelines for biohazard waste disposal.

**CAUTION**

When placing the waste tank, ensure the top of the tank is lower than the bearing platform on which the system is placed.

Ensure the waste tube is over the tank and not blocked, bent, or twisted. A blocked, bent or twisted waste tube may lead to wastewater overflow that may damage the analyzer.

- 1 Place the Power to OFF.
 - 2 Check the connections between connector marked WASTE on the analyzing unit and its counterpart.

If no leakage occurs, proceed to the next step.

If you see leaks, wipe off the water with clean gauze, and then reconnect the waste tube.
 - 3 Check the connection between the waste tube and the connector.

If no leakage occurs, proceed to the next step.

If you see leaks, wipe them off with clean gauze and tighten the waste tube.
 - 4 Check the connection between the waste tube and the waste tank cap.

If you see leaks, wipe them off with clean gauze and tighten the waste tube.
-

**NOTE**

If leakage remains after the above operations are finished, please contact our customer service department or your local distributor.

5.2.5 Checking Syringe

**WARNING**

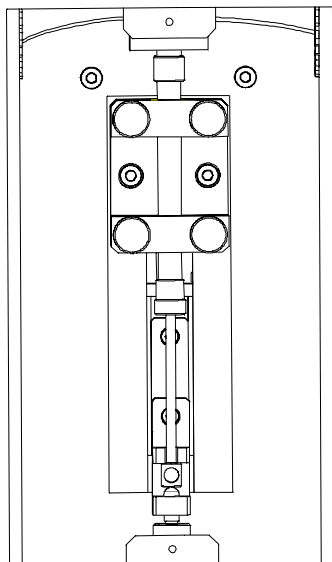
The probe tip is sharp and can cause puncture wounds. To prevent injury, exercise caution when working around the probe.



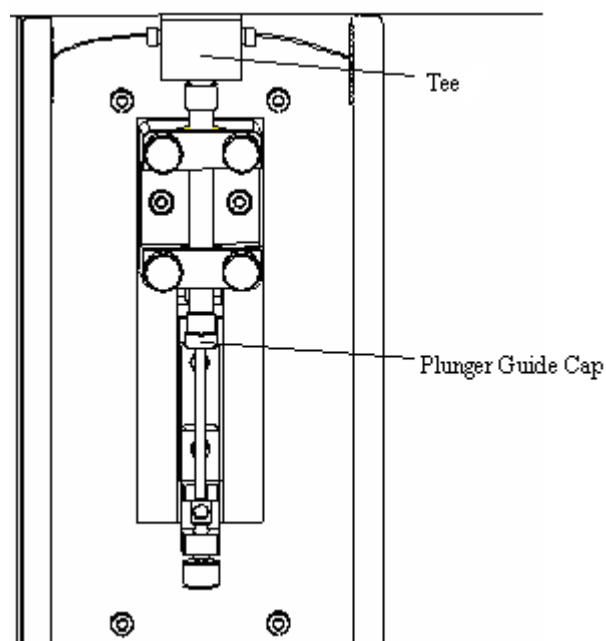
BIOHAZARD

Wear gloves and lab coat and, if necessary, goggles.

Figure 5-1 Syringe



- 1 Place the Power to OFF.
- 2 Unscrew the screws on the syringe cover and remove the cover. The structure of the syringe is as shown in the figure below.



- 3 Check whether the T-piece leaks.
If no leakage occurs, proceed to the next step.
If you see leaks, please contact our customer service department or your local distributor.

- 4 Check whether the plunger guide cap leaks.
If no leakage occurs, proceed to the next step.
If you see leaks, replace the plunger assembly of syringe as instructed by **5.6.4Replacing Plunger Assembly of Syringe**.
- 5 Check whether air bubbles exist in the syringe.
If no, proceed to the next step.
If yes, remove the bubbles as instructed by **5.6.5Removing Air Bubbles**.
- 6 Place the cover of syringe back and tighten the screws.

5.2.6 Checking Probe

- 1 Check whether the probe is bent or dirty.
- 2 If not bent, go directly to the next step.
If so, replace the probe as instructed by **5.6.2Replacing Probe**.
- 3 If not dirty, go directly to the next step.
If yes, clean the probe as instructed by **5.3.1Cleaning Probe**.
- 4 Check whether the probe tip has remaining liquid on it.
- 5 If not, go directly to the next step.
If yes, please contact our customer service department or your local distributor.
- 6 During washing process, check whether the flow from the interior of the probe is continuous and in the direction of the probe; check the exterior of the probe to see whether the flow is normal.
- 7 If the flow from the interior appears normal, go directly to the next step.
Otherwise, please contact our customer service department or your local distributor.
- 8 If the flow to wash the exterior appears normal, the checking operation is over.
Otherwise, clean the probe as instructed by **5.6.1Unclogging Probe**.
- 9 If the flow becomes normal after cleaning, the checking operation is over.
Otherwise, please contact our customer service department or your local distributor.

5.2.7 Checking Mixing Bar

- 1 Check whether the mixing bar is bent or dirty.
- 2 If not bent, go directly to the next step.
If so, replace the mixing bar as instructed by **5.6.3Replacing Mixing Bar**.
- 3 If not dirty, go directly to the next step.
If yes, clean the mixing bar as instructed by **5.3.2Cleaning Mixing Bar**.
- 4 During washing process, check whether the mixing bar moves back and forth normally and the flow appears normal.

- 5 If yes, the checking operation is over.
If not, please contact our customer service department or your local distributor.

5.2.8 ISE Unit (optional)

5.2.8.1 Daily Cleaning



BIOHAZARD:

To prevent infection, always wear gloves, goggles and protective clothing when doing the below checks.

The cleaning solution is irritating to eyes and skin. Avoid contact with skin and eyes. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.



CAUTION:

Use the consumables recommended by our company. Other consumables may degrade system performance.

Add solution supplied in the cleaning solution kit to top of label on the powder bottle that is also supplied in the same kit and shake well to prepare the cleaning solution.

The cleaning solution must be stored at 2-8°C and discarded after two weeks.



NOTE:

The maintenance is necessary to be performed when the ISE unit (optional) is connected.

You should perform the maintenance once a day after all the samples are analyzed. Besides, if the samples of a day requested for the ISE tests are 50 or more, you should perform the maintenance after 50 samples are analyzed.

If you give the electrodes some time to stabilize after cleaning, you will experience slightly better performance.

- 1 Enter the **ISE** screen of the **Maintenance** of the system software.
- 2 Select the **Daily Maint** tab.
- 3 Click the **Clean** button and a dialog box will pop up to remind you to put ISE cleaning solution to the position 37 on the Sample/Reagent Disk.
- 4 Click the **OK** button.
- 5 After cleaning, if there are samples requested for the ISE tests to be run, calibration should be run first. But We recommend running an ISE calibration after cleaning.

ISE unit daily cleaning can be configured to operate automatically. See **4.16.1.2ISE** for details.

5.2.8.2 Pump Calibration

- 1 Enter the **ISE** screen of the **Maintenance** of the system software.
- 2 Select the **Daily Maint** tab.
- 3 Click the **Pump Cal** button.

Pump Calibration can be configured to operate automatically. See **4.16.1.2ISE** for details.

5.3 Weekly Maintenance

5.3.1 Cleaning Probe



WARNING

The probe tip is sharp and can cause puncture wounds. To prevent injury, exercise caution when working around the probe.

The acid or alkaline wash solution may hurt human skins. Exercise caution when handling the wash solution.



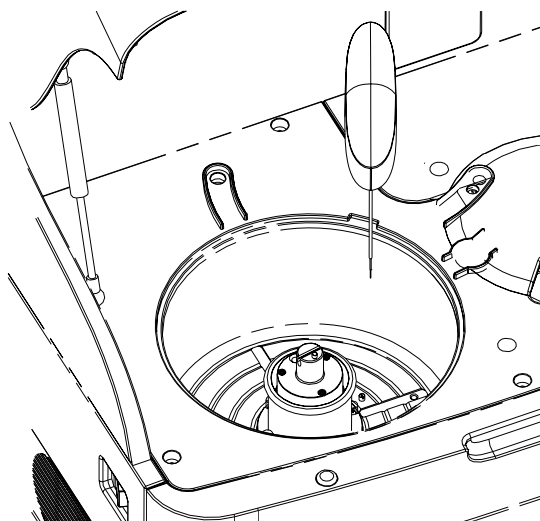
BIOHAZARD

Wear gloves and lab coat and, if necessary, goggles.

Dispose of the used gauze in accordance with your local or national guidelines for biohazard waste disposal.

- 1 Place the Power to OFF.
- 2 Remove the cover from the sample/reagent disk.
- 3 Remove the sample/reagent disk.

- 4 Pull the probe arm to the highest point by hand. Rotate the probe arm to move the probe to a position above the sample/reagent compartment and convenient to operate.



5



CAUTION

The tweezers may scratch the probe. Exercise caution when using it to clean the probe. Avoid direct contact between the tweezers and the probe. Do not use excessive force when cleaning the probe. Otherwise it may bend.



NOTE

We recommend the acid and alkaline wash solutions be used alternately for this purpose. For instance, if the acid wash solution has been used for last maintenance, the alkaline wash solution had better be used for this time.

Use ethanol-dipped gauze to gently wipe the exterior of the probe until it is clean and smooth.



- 6 Use tweezers to pinch deionized water-soaked gauze to clean the probe.

- 7 After cleaning, gently pull the probe arm to its highest point and rotate the probe arm to move the probe to a position above the wash well.
- 8 Load the sample/reagent disk.
- 9 Install the sample/reagent disk cover.

5.3.2 Cleaning Mixing Bar



WARNING

The probe tip is sharp and can cause puncture wounds. To prevent injury, exercise caution when working around the probe.



BIOHAZARD

Wear gloves and lab coat and, if necessary, goggles.

Dispose of the used gauze in accordance with your local or national guidelines for biohazard waste disposal.

- 1 Place the Power to OFF.
- 2 Pull the mixing bar arm to the highest point by hand. Rotate the bar arm to move the bar to a position convenient to operate.

3



CAUTION

The tweezers can scratch the bar. Exercise caution when using the tweezers to clean the bar. Avoid direct contact between the tweezers and the bar. Do not use excessive force when cleaning the bar. Otherwise it may bend.



NOTE

We recommend the acid and alkaline wash solutions be used alternately for this purpose. For instance, if the acid wash solution has been used for last maintenance, the alkaline wash solution had better be used for this time.

Use ethanol-dipped gauze to gently clean the mixer until it is clean and smooth.



- 4 Use tweezers to pinch deionized water-soaked gauze to clean the mixing bar.

- 5 After cleaning, gently pull the bar arm to its highest point and rotate the bar arm to move the bar to a position above the wash well.

5.3.3 Washing Deionized Water Tank



CAUTION

The water must meet requirements of the CAP Type II water.

When placing the deionized water tank, ensure the top of the tank is lower than the bearing platform on which the system is placed.

Ensure the deionized water pickup tube is not blocked, bent, or twisted.

- 1 Place the Power to OFF.

2



CAUTION

After removing the cap of the deionized water, place it on a clean table.

Unscrew (counter-clockwise) the tank cap and remove the cap together with the pickup tube and the sensor.

- 3 Wash the tank interior with deionized water. Use a clean brush to clean the interior if necessary.
- 4 Wash the pickup tube and the sensor with deionized water. Use clean gauze to wash them if necessary.
- 5 Wipe water off the tank exterior, pickup tube and sensor cable with clean gauze.
- 6 Add deionized water into the tank.
- 7 Screw (clockwise) the cap back onto the tank until secure.

5.3.4 Washing Waste Tank



BIOHAZARD

Wear gloves and lab coat and, if necessary, goggles.

Exercise caution and do not spill the waste onto other people or things.

Dispose of the wastewater in accordance with your local or national guidelines for biohazard waste disposal, and consult the manufacturer or distributor of the reagents for details.

Dispose of the used gauze in accordance with your local or national guidelines for biohazard waste disposal.



CAUTION

When placing the waste tank, ensure the top of the tank is lower than the bearing platform on which the system is placed.

Ensure the waste tube is over the tank and not blocked, bent, or twisted. A blocked, bent or twisted waste tube may lead to wastewater overflow that may damage the analyzer.

- 1 Place the Power to OFF.

2



BIOHAZARD

After removing the cap of the waste tank (together with the tube and sensor), place it on an appropriate place to avoid infection.

Unscrew (counter-clockwise) the tank cap and remove it together with the waste tube and the sensor from the tank.

- 3 Empty the waste tank.
- 4 Wash the tank interior with clean water. Soak the tank with disinfectant if necessary.
- 5 Wash the waste tube and the sensor with clean water.
- 6 Wipe water off the tank exterior, waste tube and sensor cable with clean gauze.
- 7 Screw (clockwise) the cap (together with the waste tube and the sensor) back onto the tank until secure.

5.3.5 Cleaning Sample/Reagent Compartment



WARNING

The probe tip is sharp and can cause puncture wounds. To prevent injury, exercise caution when working around the probe.



BIOHAZARD

Wear gloves and lab coat and, if necessary, goggles.

Dispose of the used gauze in accordance with your local or national guidelines for biohazard waste disposal.

- 1 Place the Power to OFF.
- 2 Remove the cover from the sample/reagent disk.
- 3 Take out all calibrators, controls, samples, reagents, distilled water and wash solution from the sample/reagent disk.
- 4 Remove the sample/reagent disk.
- 5 Wash the disk with clean water and wipe it dry with clean gauze.
- 6 Use clean gauze (water or disinfectant-dipped gauze if necessary) to clean the inside of the compartment.
- 7 Load the sample/reagent disk.

- 8 Install the sample/reagent disk cover.

5.3.6 Cleaning Panel of Analyzing Unit



WARNING

The probe tip is sharp and can cause puncture wounds. To prevent injury, exercise caution when working around the probe.



BIOHAZARD

Wear gloves and lab coat and, if necessary, goggles.

- 1 Place the Power to OFF.
- 2 Wipe the panel of the analyzing unit with clean gauze (water or disinfectant-dipped gauze if necessary).

5.4 Monthly Maintenance

5.4.1 Cleaning Wash Well of Probe



WARNING

The probe tip is sharp and can cause puncture wounds. To prevent injury, exercise caution when working around the probe.



BIOHAZARD

Wear gloves and lab coat and, if necessary, goggles.

Dispose of used cotton swabs in accordance with your local or national guidelines for biohazard waste disposal.

- 1 Place the Power to OFF.
- 2 Pull the probe arm to its highest point. Rotate the arm to move the probe away from the wash well.
- 3 Clean the inside of and the place around the wash well with cotton swabs.
- 4 Pull the probe arm to its highest point and rotate it to move the probe to a position above the wash well.

5.4.2 Cleaning Wash Well of Mixing Bar



WARNING

The bar tip is sharp and can cause puncture wounds. To prevent injury, exercise caution when working around the mixing bar.



BIOHAZARD

Wear gloves and lab coat and, if necessary, goggles.

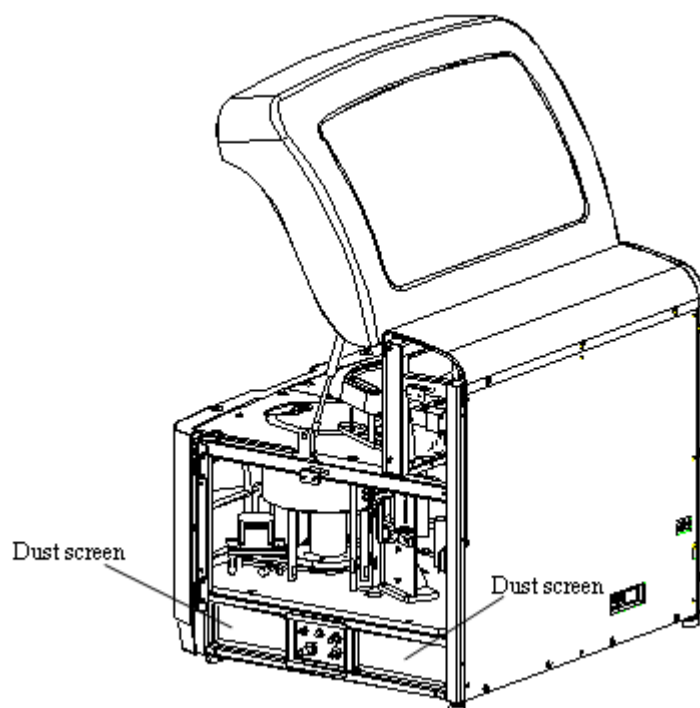
Dispose of used cotton swabs in accordance with your local or national guidelines for biohazard waste disposal.

- 1 Place the Power to OFF.
- 2 Pull the mixing bar arm to its highest point.
- 3 Clean the inside of and the place around the wash well with cotton swabs.
- 4 Pull the mixing bar arm to a position above the wash well.

5.5 Six-month Maintenance

5.5.1 Washing Dust Screen

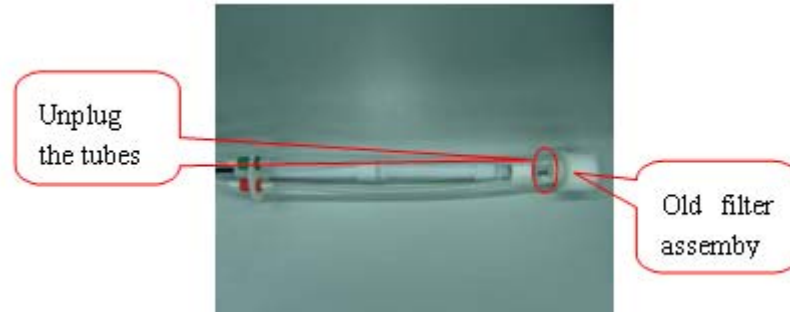
- 1 Place the Main Power to OFF.
- 2 Use a screwdriver to unscrew the screws on the right plate and remove the right plate.
- 3 Remove the dust screens from the plate.



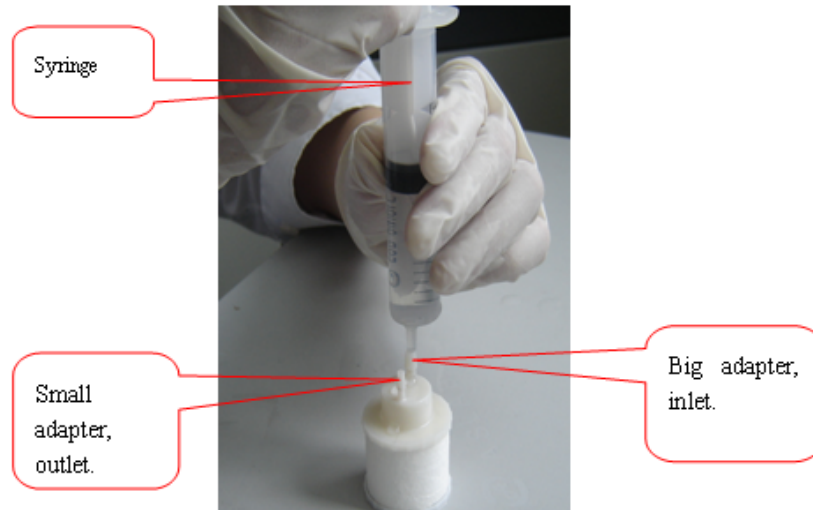
- 4 Wash the screens with clean water and dry them by airing.
- 5 Install the screens back to the right plate.
- 6 Install the right plate with screws.

5.5.2 Replacing Filter Assembly

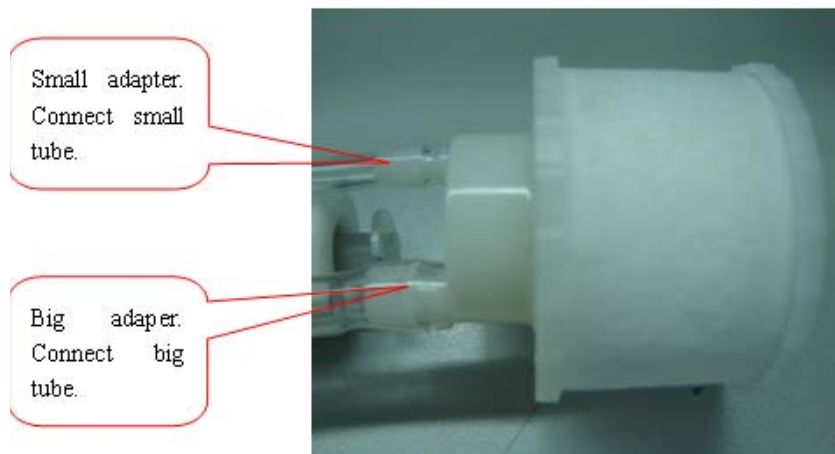
- 1 Remove cap assembly from the DI water tank and place it on a clean desktop. Carefully remove the filter assembly from the cap assembly.



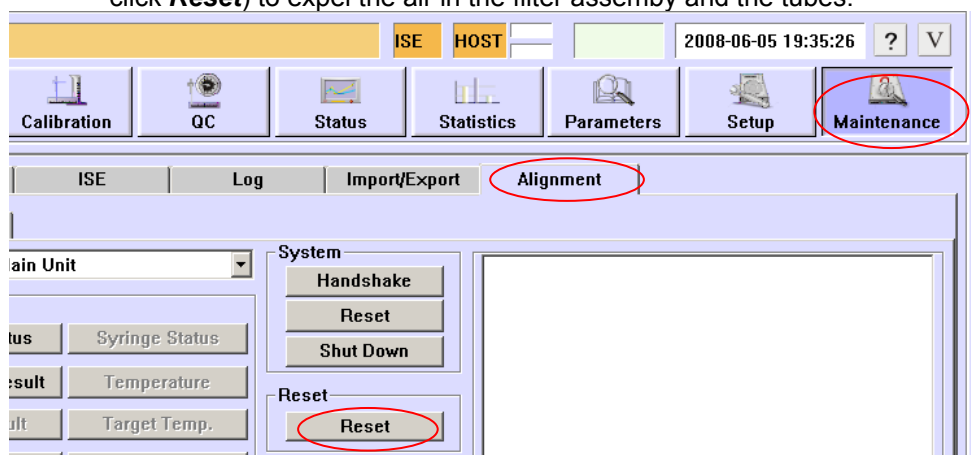
- 2 Inject water into the new filter assembly through the big adapter by using the syringe. When water wells up from the small adapter, the injection is completed. Purpose: increase the weight of the filter assembly to make it sink to the bottom of the water tank.



- 3 Connect the new filter assembly to the tubes of the cap assembly.



- 4 Expel air from the filter assembly
 - 1) Connect the DI water tank assembly to the analyzer (pay attention to the color of the adapters). Put the assembly into the water tank and make sure that the filter sink smoothly to the tank bottom and does not twist with the floater connecting rod. Tighten the cap of the DI water until secure.
 - 2) Place the Main Power and Power of the analyzer to ON. Turn on the computer and start the operating software.
 - 3) Reset 10 times (click **Maintenance** and then select **Alignment**, click **Reset**) to expel the air in the filter assembly and the tubes.



- 4) Check for large amount of bubbles in the outlet tube. If yes, continue the resetting process; if not, the air expelling is completed.
- 5 The installation is completed.

5.6 Irregular Maintenance

5.6.1 Unclogging Probe

When the probe is clogged, the fluid flow will become abnormal.

Follow the steps given below to remove, unclog and install the probe.

5.6.1.1 Removing Probe



WARNING

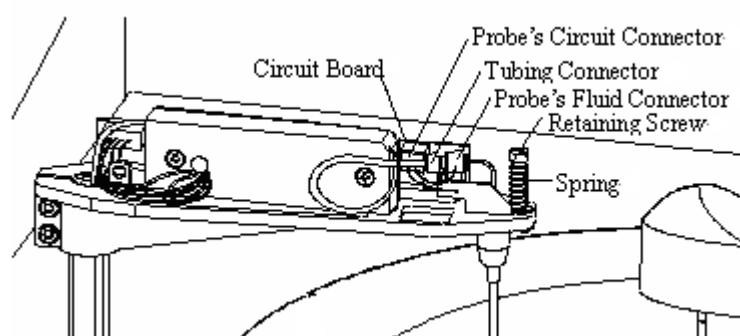
The probe tip is sharp and can cause puncture wounds. To prevent injury, exercise caution when working around the probe.



BIOHAZARD

Wear gloves and lab coat and, if necessary, goggles.

- 1 Place the Power to OFF.
- 2 Remove the sample/reagent disk.
- 3 Pull the probe arm to the highest point by hand. Rotate the probe arm to move the probe to a position above the sample/reagent compartment and convenient to operate.
- 4 Grab the lower part of the arm cover with two hands and pull them slightly outwards and remove the cover upward from the arm base. After you remove the cover, the inside structure of the probe arm is as shown in the figure below.



- 5 Hold the probe's fluid connector with one hand and the tubing connector with the other. Rotate the tubing connector counter-clockwise until it disconnects from the probe. Remove the tubing from the probe.



CAUTION

You will see a small gasket inside the tubing connector which is removed from the probe. Exercise caution and make sure the gasket is always inside the tubing connector. If the gasket falls off, store it in a clean place.

After disconnecting the tubing from the probe, use clean gauze to wipe the tubing connector so that no liquid drops will appear.

- 6 Press the circuit board with one hand and disconnect the probe's circuit connector from the board with the other hand.



CAUTION

Exercise caution when disconnecting the connector. Excessive force may damage the connector and/or the circuit board.

- 7 Use a slotted head screwdriver to remove the retaining screw on the probe and take out the spring.

**WARNING**

Store the removed probe in a safe place where it will neither endanger people working around the area nor be damaged.

**NOTE**

Exercise caution when pulling the probe away from the arm.

Slowly pull the probe away from the probe arm. Exercise caution so that the gasket inside the probe does not drop out and if it does, store it in a clean place for later installation.

**NOTE**

A bent or damaged probe will lead to unreliable test results and should be replaced immediately.

5.6.1.2 Unclogging Probe

**WARNING**

The probe tip is sharp and can cause puncture wounds. To prevent injury, exercise caution when working around the probe.

**BIOHAZARD**

Wear gloves and lab coat and, if necessary, goggles.

Dispose of the used needle in accordance with your local or national guidelines for biohazard waste disposal.

- 1 Use a needle to unclog the probe from the tip.

**CAUTION**

A bent or damaged probe will lead to unreliable test results and should be replaced immediately.

5.6.1.3 Installing Probe



WARNING

The probe tip is sharp and can cause puncture wounds. To prevent injury, exercise caution when working around the probe.



BIOHAZARD

Wear gloves and lab coat and, if necessary, goggles.

- 1 Place the Power to OFF.
- 2 Insert the probe back into the hole on probe arm, and align the hole on probe plate to the rotor inside the arm.
- 3 Sleeve the spring on the rotor and screw the retaining screws to secure.
- 4 Pinch the probe by the part near the probe arm. Gently push the probe upward and then release the probe to see if the spring can move freely.
If yes, proceed to the next step.
If not, check for errors and try again after removing the errors.
- 5 Connect the probe's circuit connector back to the circuit board.
- 6 Ensure the gasket is inside the probe.



NOTE

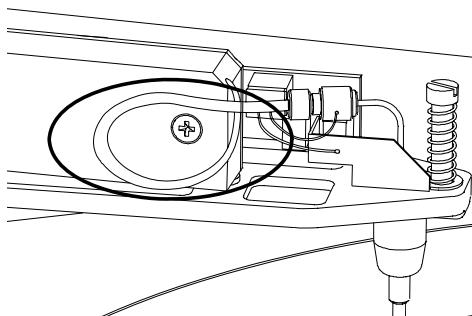
You should replace the gasket with a new one after removing and installing the probe for about 2-3 times. Otherwise, sealingness of the fluidic path and sampling precision may be influenced.

7



CAUTION

The fluid tube inside the probe arm should be bent into a circle when being installed.



Exercise caution when connecting the probe. Excessive force may bend the probe.

Screw (clockwise) the probe's fluid connector back to the tubing connector.

- 8 Add deionized water to a clean cup. Immerse the probe tip into the water by about 3mm and the LED on the circuit board will be lighted. Take the probe tip out of water, and the LED will be off. If the test succeeds, proceed to the next step.

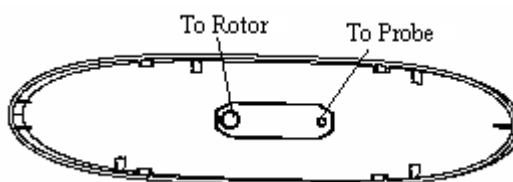
If not, please contact our customer service department or your local distributor.

- 9 Check the marks inside the probe arm cover to see the orientation of the cover. Install the cover back to the probe arm.



CAUTION

The marks inside the probe arm cover are shown in the figure below.



- 10 Pull the probe arm to its highest point and rotate it to move the probe to a position above the wash well.
- 11 Load the sample/reagent disk.



CAUTION

A bent or damaged probe will lead to unreliable test results and should be replaced immediately.

5.6.2 Replacing Probe

If the probe is bent or damaged, it must be replaced immediately. Follow the procedure given below to replace the damaged or bent probe.



WARNING

The probe tip is sharp and can cause puncture wounds. To prevent injury, exercise caution when working around the probe.



BIOHAZARD

Wear gloves and lab coat and, if necessary, goggles.



CAUTION

Please use our recommended consumables. Other consumables may decrease the system performance.

- 1 Remove the bent or damaged probe as instructed by **5.6.1.1 Removing Probe**.



BIOHAZARD

Dispose of the bent or damaged probe in accordance with your local or national guidelines for biohazard waste disposal.

- 2 Install a new probe as instructed by **5.6.1.3 Installing Probe**.

5.6.3 Replacing Mixing Bar

If the mixing bar is damaged, it must be replaced immediately. Follow the procedure given below to replace the damaged mixing bar.



WARNING

The bar tip is sharp and can cause puncture wounds. To prevent injury, exercise caution when working around the mixing bar.

When replacing the bar, pinch the bar only by the knurled part and do not touch the other part of the bar. Protect the flat part of the bar from being scratched.



BIOHAZARD

Wear gloves and lab coat and, if necessary, goggles.

Dispose of the damaged mixing bar in accordance with your local or national guidelines for biohazard waste disposal.



CAUTION

Please use our recommended consumables. Other consumables may decrease the system performance.

- 1 Place the Power to OFF.
- 2 Gently pull the bar arm to its highest point and move the bar to a position convenient to operate.

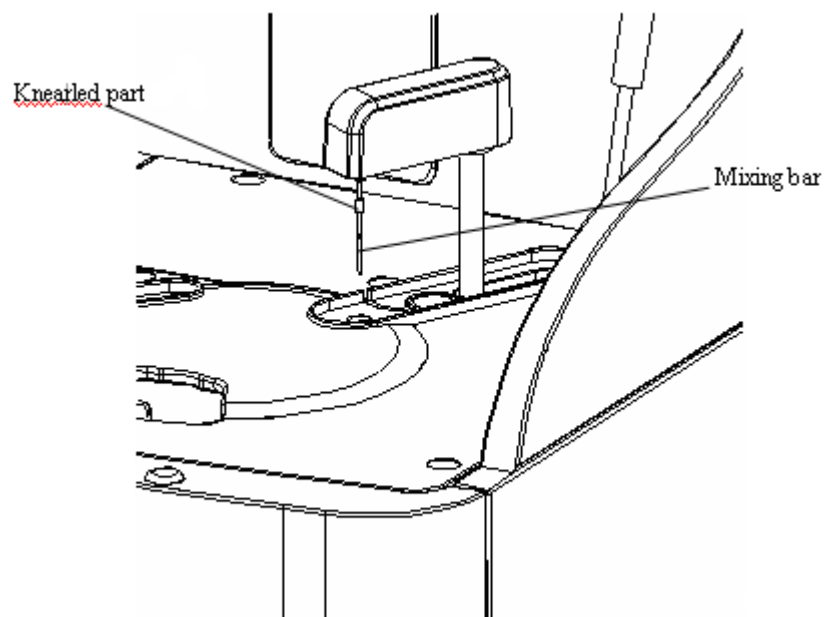
3



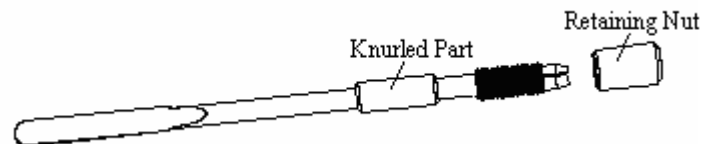
CAUTION

When trying to pull out the bar, concentrate your force in the direction of the axis on the bar arm. Biased force may damage the bar and/or the axis.

Pinch the bar by the knurled part with one hand and unscrew (counter-clockwise) the retaining nut with the other hand until the mixing bar loosens. Pull the bar downward to remove it and remove the nut.



- 4 Align the new mixing bar to the bigger hole end of the retaining nut and gently screw it into the nut until the end of the bar is in line with the smaller hole end of the nut.



- 5 Pinch the mixing bar by the knurled part and align the hole of the nut to the axis on the bar arm, then push the bar upward in the direction of the axis until it can't proceed. Tighten the nut by screwing clockwise with the other hand.



CAUTION

When trying to pull out the bar, concentrate your force in the direction of the axis on the bar arm. Biased force may damage the bar and/or the axis.

Ensure the bar is all the way pushed to the end.

- 6 After replacing the bar, visually check whether the bar is vertical to the bar arm.
If not, remove the bar and re-install it.
If yes, proceed to the next step.
- 7 Pull the bar arm slightly and move the bar to a position above its wash well.

5.6.4 Replacing Plunger Assembly of Syringe

You should replace the old plunger assembly of syringe with a new one when,

- The old one has served for three months; or
- The old one has been used for over 100,000 tests; or
- The old one is apparently damaged.



WARNING

The probe tip is sharp and can cause puncture wounds. To prevent injury, exercise caution when working around the probe.



BIOHAZARD

Wear gloves and lab coat and, if necessary, goggles.



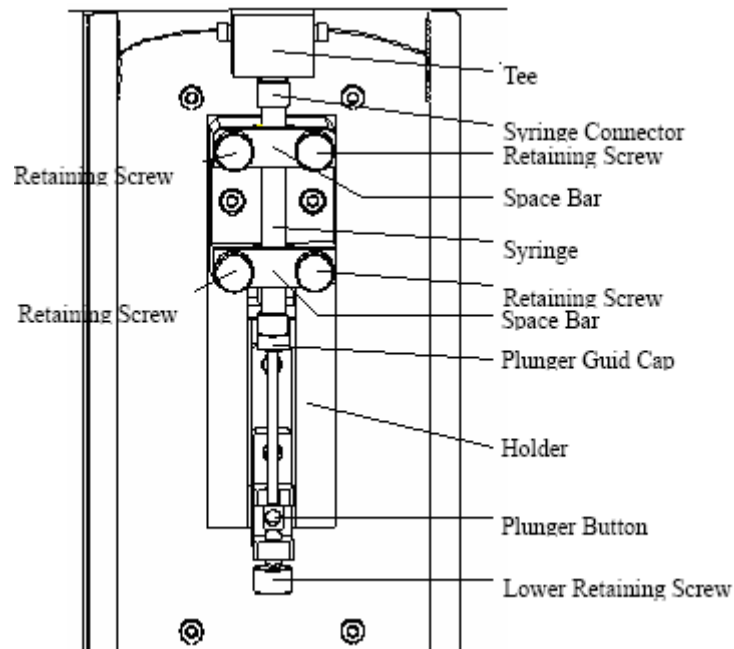
CAUTION

Please use our recommended consumables. Other consumables may decrease the system performance.

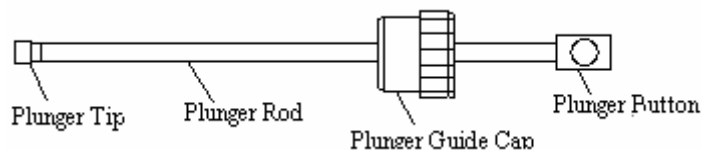
Exercise caution when installing the plunger assembly. Excessive force may crack the syringe. The syringe gasket that has been removed and installed for 2 or 3 times must be replaced in time.

Always wear gloves while replacing the plunger assembly of syringe.

- 1 Place the Power to OFF.
- 2 Unscrew the screws on the syringe cover and remove the cover. The structure of the syringe is as shown in the figure below.



- 3 Prepare a new plunger assembly (shown in the figure below) and soak the plunger tip in deionized water to eliminate bubbles.



- 4 Unscrew (counter-clockwise) the lower retaining screw.
- 5 Unscrew (counter-clockwise) the four retaining screws, remove the screws and space bars, and remove the syringe from the holder.
- 6



WARNING

There may be residual water in the syringe connector. Do not drop water onto the analyzing unit.

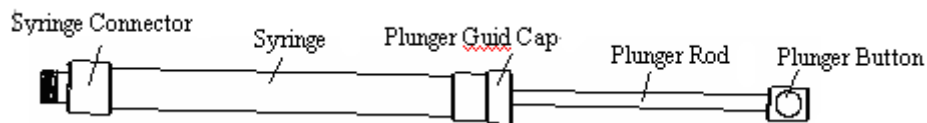
Grab the Tee with one hand and the syringe connector with the other hand and unscrew (counter-clockwise) the syringe. Exercise caution so that the gasket on the syringe does not drop out and if it does, store it in a clean place for later installation.



NOTE

You should replace the gasket with a new one after removing and installing the syringe for about 2-3 times. Otherwise, sealingness of the fluidic path and sampling precision may be influenced.

- 7 Unscrew (counter-clockwise) the plunger guide cap and pinch the plunger button to gently pull the plunger assembly from the syringe.



- 8 Pinch the new plunger assembly by the plunger button and carefully insert the plunger tip into the syringe and push it all the way to the end. Screw (clockwise) the plunger guide cap until secure.
- 9 Immerse the syringe connector into deionized water. Pinch the plunger button, pull it to aspirate half syringe of deionized water and then push it to expel the deionized water and the air from the syringe.
- 10 Grab the Tee with one hand and the syringe connector with the other hand. Screw (clockwise) the syringe into the Tee until secure.
- 11 Place the syringe on the holder. Install space bars and fix retaining screws.



CAUTION

The upper edge of the upper space bar must reach the seventh line of the scale on the syringe.

When fixing retaining screws, be sure to tighten them alternately with equilibrium force.

- 12 Screw (clockwise) the lower retaining screw until secure.
- 13 Place the Power back to ON.
- 14 Enter the **Alignment** screen of the operating software and set the **Vol. (R. Syringe)** to 450ul. Click **R. Syringe Aspirate**. After the syringe finishes the motion, click **R. Syringe Dispense**. You may repeat this action several times. Refer to **4.17.5 Alignment** for details.

Pay attention to bubbles during the aspiration/dispensing process.

If there are bubbles observed during the process, they may be caused by the air leak between the syringe and the Tee. Uninstall the syringe and re-install it. If the bubbles are found again, please contact our customer service department or your local distributor.

5.6.5 Removing Air Bubbles

When you see air bubbles in the syringe, follow this procedure to remove them.



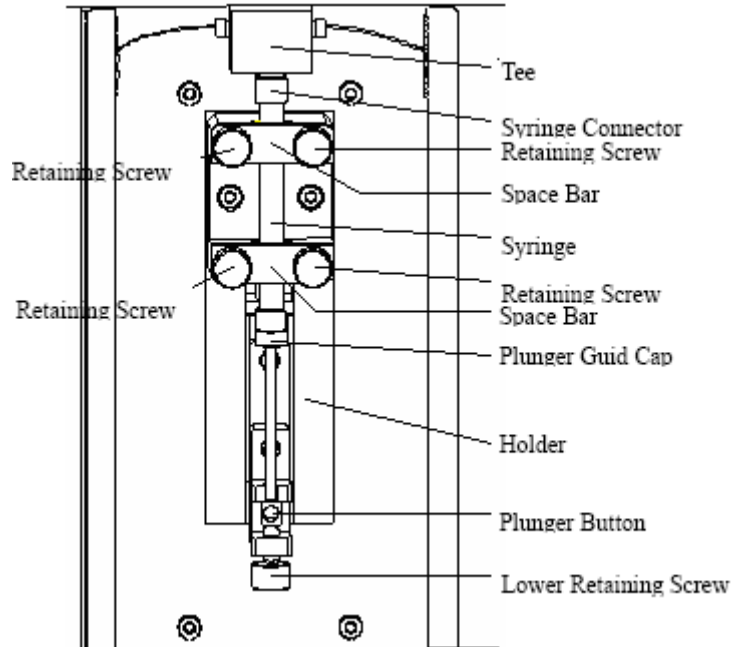
BIOHAZARD

To prevent infection, always wear gloves, goggles and protective clothing when doing the maintenance.

Dispose of the waste in accordance with your local or national guidelines for biohazard waste disposal.

- 1 Place the Power to OFF.
- 2 Unscrew the screws on the syringe cover and remove the cover.

The structure of the syringe is as shown in the figure below.



- 3 Unscrew (counter-clockwise) the lower retaining screw.
- 4 Unscrew (counter-clockwise) the four retaining screws, remove the screws and space bars, and remove the syringe from the holder.
- 5 Pull the plunger gently outwards until you can not proceed any more, and then push it quickly. Repeat this pull-push operation until the air bubbles are removed from the syringe.



CAUTION

Be sure not to push the plunger to the end tip; otherwise the syringe may be damaged.

- 6 Place the syringe on the holder. Install space bars and fix retaining screws.



NOTE

The upper edge of the upper space bar must reach the seventh line of the scale on the syringe.

When fixing retaining screws, be sure to tighten them alternately with equilibrium force.

- 7 Screw (clockwise) the lower retaining screw until secure.

5.6.6 Replacing Lamp

Replace the lamp with a new one when the system reminds you to do so, or the service time of the lamp has added up to 1,000 hours.



CAUTION

Please use our recommended consumables. Other consumables may decrease the system performance.

Do not touch either the light entrance of the lamp or the lens in front of the lamp. In case the entrance is dirty, clean it with ethanol-soaked defatted cotton.



NOTE

Avoid screws' ingress into the analyzer while disassembling the panels.

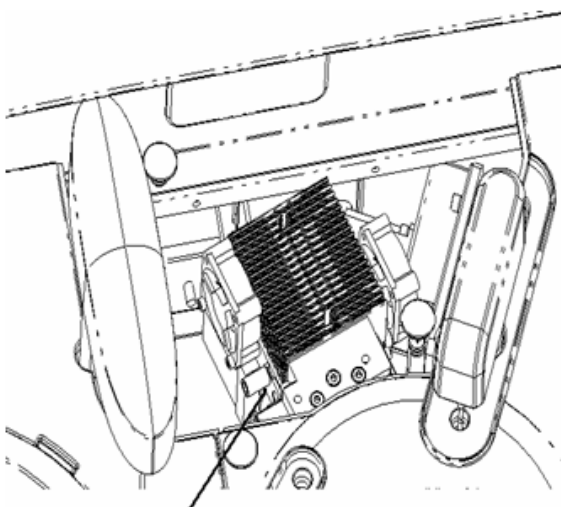
- 1 Place the Main Power to OFF. Wait at least 15 minutes for the lamp and its housing to cool down.



WARNING

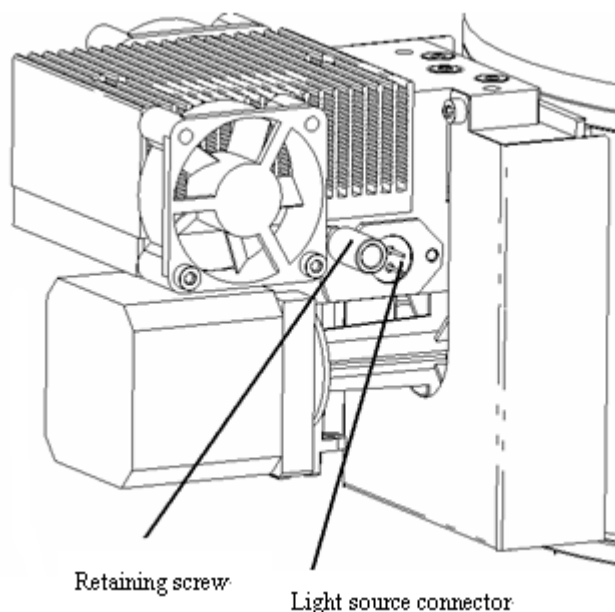
After working for a while, the lamp and its housing are usually hot enough to burn you. Do not proceed with this procedure until they have cooled down.

- 2 Unscrew the retaining screws on the front panel of the analyzing unit and remove the front panel. You will see the lamp inside the analyzing unit.



Light source

- 3 Unplug the connector of the light source cable.



- 4 Loosen the retaining screws with hands, and then remove the lamp backwardly.
- 5 Install a new lamp by securing it with the retaining screws.
- 6 Connect the light source cable to the corresponding jack.
- 7 Install the panel back to the box and tighten the screws.
- 8 After new lamp is installed, run starting procedure, enter the software interface and check the background of the 8 wavelengths at the “**Maintenance**” interface. If the background is lower than 65535, the replacement is successful. In case the background reaches 65535, please contact our customer service department or your local distributor.

Daily Maint	ISE	Log	Import/Export	Alignment
System Status				
Reaction Temp.			Dark Current/Background	
Preheat Temp.			Dark Current	Background
Waste Tank			340	83 44765
Deionized Water			405	83 44765
Printer	Idle		450	83 44765
Light Intensity	68%		510	83 44765
Unit Status			546	83 44765
Main Unit			578	83 44765
Reaction Unit			630	83 44765
Sample Unit			670	83 44765
Reagent Unit			Reference	1 1
Temperature Unit				
Mixing Unit				
<div> <div>Startup Check</div> <div>Recover</div> <div>Wash</div> <div>Enhanced</div> <div>Dark Current</div> <div>Reset</div> </div>				

5.6.7 Replacing ISE Components (Optional)



BIOHAZARD:

To prevent infection, always wear gloves, goggles and protective clothing when doing the maintenance.

Dispose of the waste in accordance with your local or national guidelines for biohazard waste disposal.



CAUTION:

Use the consumables recommended by our company. Other consumables may degrade system performance.



NOTE:

Generally after the replacement of any of the following components, several ISE calibrations should be run before ISE Unit become stable.

5.6.7.1 Replacing Reagent Pack

- 1 Place the POWER to OFF.
- 2 Open the ISE unit door.
- 3 Remove and install a new reagent module. Refer to **2.10.1 Installing/Removing Reagent Pack**
- 4 Enter the **ISE** screen of the **Maintenance** of the system software.
- 5 Select the **Daily Maint** tab.
- 6 Enter digit "25" in the blank on the right of the button **Purge Comb**, then click it.
- 7 Click **Purge A** and **Purge B** button to check whether the initialization of the Reagent Pack is finished. If no error occurs during the process, the Reagent Pack is replaced successfully.

5.6.7.2 Replacing Electrodes



WARNING:

Before performing the replacement, make sure the analyzer is powered off.

If you run no more than 100 samples requested for the ISE tests a day, replace the electrodes according to the following recommended schedule:

Na ⁺ Electrode	6 months
K ⁺ Electrode	6 months
Cl ⁻ Electrode	6 months
Li ⁺ Electrode	6 months
Reference Electrode	6 months

If you run more than 100 samples requested for the ISE tests a day, replace the electrodes according to the following recommended schedule:

Na ⁺ Electrode	10,000 samples
K ⁺ Electrode	10,000 samples
Cl ⁻ Electrode	10,000 samples
Li ⁺ Electrode	3,000 samples
Reference Electrode	10,000 samples



NOTE:

Because the electrodes must be installed sequentially, you have to take out the electrode to be replaced and those (or that) over it from above to below.

- 1 Enter the **ISE** screen of the **Maintenance** of the system software.
- 2 Select the **Daily Maint** tab.
- 3 Click the **Maintenance** button.
- 4 Replace the electrodes, please refer to the **2.10.2Installing/Removing Electrodes**
- 5 Click **Purge A** button and if no error occurs during the process, it means the electrode is replaced successfully.

5.7 Maintenance Log Sheets

The following table lists the parts to be maintained and the maintenance schedules. Please copy it every month and place a check mark in each day column for the maintenance items in the list after performing maintenance.

Month_____Year_____

Maintenance Record																																
Daily Maintenance		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	Checking Syringe																															
2	Checking Probe																															
3	Checking Mixing Bar																															
4	Checking Connection of Deionized Water																															
5	Checking Connection of Wastewater																															
6	Checking Remaining Deionized Water																															
7	Emptying Waste Tank																															
Weekly Maintenance		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	Cleaning Probe																															
2	Cleaning Mixing Bar																															
3	Washing DI Water Tank																															
4	Washing Waste Tank																															
5	Clean Panel of Analyzing Unit																															
Monthly Maintenance		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	Cleaning Wash Well of Probe																															
2	Cleaning Wash Well of Mixing Bar																															
Maintenance Every Six Months		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	Washing Dust Screen																															

[illegible]

6 *Troubleshooting*

This chapter presents all warning messages and recommended corrective actions, which should be taken in time once any error occurs.

If the recommended measures fail to solve the problems, contact our customer service department or your local distributor.

When an error or failure occurs, the system will display the error or warning message and take corresponding actions automatically.

The error or warning messages will be displayed in the warning messages area at the bottom of the operating software screen and the warning messages will be recorded in the system log. The log will record the time, level, code and detailed message of each warning to help you record and search errors. Refer to **4.17.3Log** for details about the log.

In case of an error/warning message, check its error code on the **Logs** screen, and then check the table below for recommended corrective measures.

6.1 Classification of Error Messages

On the system, the error messages are divided into different types according to their severity.

Severity: Warning

Level	Description	Actions taken by the system
0	Errors to neglect	The system only reminds you of the errors and will not take any actions.
1	Errors to flag tests	The system flags the tests, to which abnormality

occurs or whose results are unreliable.

2	Errors to invalidate sample	When a test is invalidated due to the abnormal sample, the system will rerun the test immediately.
3	Errors to skip sample	<p>Samples for certain tests are used out.</p> <p>The system ignores all tests related to the sample and continues with other tests. You can refill the sample and resume the tests after other tests are finished, or after clicking the Probe Stop button.</p>
4	Errors to invalidate reagent	When a test is invalidated due to the erroneous reagent, the system will rerun the test immediately.
5	Errors to skip reagent	<p>Reagents for certain tests are used out.</p> <p>The system skips all tests related to the reagent and continues with other tests. You can refill the reagent and resume the tests after other tests are finished, or after clicking the Probe Stop button.</p>
6	Errors to invalidate sample/reagent	The system will invalidate all tests that are related to the reagent and sample.

Severity: Pausing

Level	Description	Actions taken by the system
7	Errors to pause mixing bar	The system will pause the probe/mixing bar and invalidate all tests but those which already have R1, sample and R1 dispensed and stirred.
8	Errors to pause probe	The system will pause the probe and invalidate all tests but those which already have R1, sample and R1 dispensed.

Severity: Stopping analysis

Level	Description	Actions taken by the system
9	Errors to stop analysis in emergency	During analysis, certain errors occur so that photometric measurement of reaction liquid is affected and the reaction disk cannot rotate normally or finish the photometric measurement.

Severity: Forbidding

Level	Description	Actions taken by the system
10	Errors to forbid test	When errors of this level occur, all tests are forbidden even the system is in idle status. If the system is running tests, no tests will continue in the next period, and all unfinished tests will be invalidated. However, you can perform other operations, such as printing test results, inquiring measurement records, etc.

Severity: Startup forbidden

Level	Description	Actions taken by the system
11	Errors to forbid startup	The operating software refuses to start up or is terminated, and then exits and returns to the Windows operating system.

Severity: Invalidating module (Reserved)

Level	Description	Actions taken by the system
12	Errors to invalidate ISE tests	The ISE tests that are affected by bubbled sample or go out of measurement range due to abnormal(insufficiently-aspirated) sample are invalidated and then run again. If the error occurs for continuously 3 times due to the same cause, the system will skip all ISE tests related to the sample during the current batch of tests.

Severity: Forbidding module (Reserved)

Level	Description	Actions taken by the system
13	Errors to forbid sample bar code scanning	When the sample bar code reader goes wrong and cannot scan sample bar code label normally, the system will not try again during the measurement. The sample positions should be set up manually. Only when reconnected and proved to be normal, the sample bar code reader can start working.
14	Errors to forbid ISE	When errors (like calibration slope out of range) occur due to failed ISE component, ISE tests will be forbidden. If such errors occur during measurement, the system will invalidate the failed ISE tests and skip all other ISE tests in current batch. If such errors occur in idle status, the system will not include ISE tests once starting analysis.

Severity: Errors to forbid LIS (Reserved)

Level	Description	Actions taken by the system
15	Errors to forbid LIS	When the LIS host goes wrong or the network connection and settings are improper, the system cannot download sample information from or send test results to LIS. You can use all functions associated to LIS only after reconnecting the system to LIS successfully.

**NOTE**

Errors of all levels but 11 will be recorded in the error logs once triggered. When level-11 error occurs, the operating software will not take any actions but warn you about the error and wait for your confirmation and then exit.

6.2 Corrective Measures

When an error occurs, check the error code on the **Logs** screen of the operating software and then find corresponding measures in the following tables.



WARNING

When troubleshooting the analyzer, first find out whether it is necessary to switch off the Main Power or Power.



BIOHAZARD

Wear gloves and lab coat and, if necessary, goggles.

Error Code	Error Message	Corrective Measure
10070001BBA5	ISE unit result error: Bubble calibration cycle error. Air in calibrant A	<ol style="list-style-type: none"> 1. Make sure that the electrodes, the pumps and the tubing are assembled correctly. 2. Check whether Reagent Pack has been installed and initialized. 3. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A button to see whether there is enough Calibration A.
10070001BBD5	ISE unit result error: Bubble calibration cycle error. Bubble detector failure	Contact our Customer Service Department or your local distributor.
10070001BBF5	ISE unit result error: Bubble calibration cycle error. No flow	<ol style="list-style-type: none"> 1. Make sure that the electrodes, the pumps and the tubing are assembled correctly. 2. Check whether Reagent Pack has been installed and initialized. 3. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A button to see whether there is enough Calibration A.
10070001BBN5	ISE unit result error: Bubble calibration cycle error. Reagent module is not installed	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. If not, please install it. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
10070001BBR5	ISE unit result error: Bubble calibration cycle error. Dallas read	Contact our customer Service Department or your local distributor.
10070001BBT5	ISE unit result error: Bubble calibration cycle error. Invalid command	Contact our customer Service Department or your local distributor.
10070001BBW5	ISE unit result error: Bubble calibration cycle error. Dallas write	Contact our customer Service Department or your local distributor.
10070001CAA5	ISE unit result error: Calibration cycle error. Air in calibrant A	<ol style="list-style-type: none"> 1. Make sure that the electrodes, the pumps and the tubing are assembled correctly. 2. Check whether Reagent Pack has been installed and initialized. 3. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A button to see whether there is enough Calibration A.

10070001CAB5	ISE unit result error: Calibration cycle error. Air in calibrant B	<ol style="list-style-type: none"> 1. Make sure that the electrodes, the pumps and the tubing are assembled correctly. 2. Check whether Reagent Pack has been installed and initialized. 3. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge B button to see whether there is enough Calibration A.
10070001CAF5	ISE unit result error: Calibration cycle error. No flow	<ol style="list-style-type: none"> 1. Make sure that the electrodes, the pumps and the tubing are assembled correctly. 2. Check whether Reagent Pack has been installed and initialized. 3. Contact our customer Service Department or your local distributor.
10070001CAM5	ISE unit result error: Calibration cycle error	Contact our customer Service Department or your local distributor.
10070001CAN5	ISE unit result error: Calibration cycle error. Reagent module is not installed	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. If not, please install it. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
10070001CAQ5	ISE unit result error: Calibration cycle error. Calibration value saving failed	Contact our customer Service Department or your local distributor.
10070001CAR5	ISE unit result error: Calibration cycle error. Dallas read	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. If not, please install it. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
10070001CAT5	ISE unit result error: Calibration cycle error. Invalid command	Contact our customer Service Department or your local distributor.
10070001CAW5	ISE unit result error: Calibration cycle error. Dallas write	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. If not, please install it. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.

10070001CLA5	ISE unit result error: Clean cycle error. Air in calibrant A	<ol style="list-style-type: none"> 1. Make sure that the electrodes, the pumps and the tubing are assembled correctly. 2. Check whether Reagent Pack has been installed and initialized. 3. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A button to see whether there is enough Calibration A.
10070001CLC5	ISE unit result error: Clean cycle error. Air in cleaner	<ol style="list-style-type: none"> 1. Make sure that the electrodes, the pumps and the tubing are assembled correctly. 2. Check whether there is enough cleaning solution on the Sample/Reagent Disk. 3. Contact our customer Service Department or your local distributor.
10070001CLF5	ISE unit result error: Clean cycle error. No flow	<ol style="list-style-type: none"> 1. Make sure that the electrodes, the pumps and the tubing are assembled correctly. 2. Check whether Reagent Pack has been installed and initialized. 3. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A and Purge B buttons to see whether there is enough Calibrator.
10070001CLM5	ISE unit result error: Clean cycle error	Contact our customer Service Department or your local distributor.
10070001CLN5	ISE unit result error: Clean cycle error. Reagent module is not installed	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. If not, please install it. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
10070001CLR5	ISE unit result error: Clean cycle error. Dallas read	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
10070001CLT5	ISE unit result error: Clean cycle error. Invalid command	Contact our customer Service Department or your local distributor.
10070001CLW5	ISE unit result error: Clean cycle error. Dallas write	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.

10070001COM5	ISE unit result error: Communication error	Contact our customer Service Department or your local distributor.
10070001CON5	ISE unit result error: Communication error. Reagent module is not installed	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. If not, please install it. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
10070001COR5	ISE unit result error: Communication error. Dallas read	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
10070001COT5	ISE unit result error: Communication error. Invalid command	Contact our customer Service Department or your local distributor.
10070001COW5	ISE unit result error: Communication error. Dallas write	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
10070001DAM5	ISE unit result error: Dallas cycle error	Contact our customer Service Department or your local distributor.
10070001DAN5	ISE unit result error: Dallas cycle error. Reagent module is not installed	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. If not, please install it. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
10070001DAR5	ISE unit result error: Dallas cycle error. Dallas read	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
10070001DAT5	ISE unit result error: Dallas cycle error. Invalid command	Contact our customer Service Department or your local distributor.
10070001DAW5	ISE unit result error: Dallas cycle error. Dallas write	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.

10070001MAF5	ISE unit result error: Maintenance cycle error. No flow	<ol style="list-style-type: none"> 1. Make sure that the electrodes, the pumps and the tubing are assembled correctly. 2. Check whether Reagent Pack has been installed and initialized. 3. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A and Purge B buttons to see whether there is enough Calibrator.
10070001MAM5	ISE unit result error: Maintenance cycle error	Contact our customer Service Department or your local distributor.
10070001MAT5	ISE unit result error: Maintenance cycle error. Invalid command	Contact our customer Service Department or your local distributor.
10070001GAA5	ISE unit result error: Purge A cycle error. Air in calibrant A	<ol style="list-style-type: none"> 1. Make sure that the electrodes, the pumps and the tubing are assembled correctly. 2. Check whether Reagent Pack has been installed and initialized. 3. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A button to see whether there is enough Calibration A.
10070001GAF5	ISE unit result error: Purge A cycle error. No flow	<ol style="list-style-type: none"> 1. Make sure that the electrodes, the pumps and the tubing are assembled correctly. 2. Check whether Reagent Pack has been installed and initialized. 3. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A and Purge B buttons to see whether there is enough Calibrator.
10070001GAM5	ISE unit result error: Purge A cycle error	Contact our customer Service Department or your local distributor.
10070001GAN5	ISE unit result error: Purge A cycle error. Reagent module is not installed	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. If not, please install it. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
10070001GAR5	ISE unit result error: Purge A cycle error. Dallas read	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.

10070001GAT5	ISE unit result error: Purge A cycle error. Invalid command	Contact our customer Service Department or your local distributor.
10070001GAW5	ISE unit result error: Purge A cycle error. Dallas write	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
10070001GBB5	ISE unit result error: Purge B cycle error. Air in calibrant B	<ol style="list-style-type: none"> 1. Make sure that the electrodes, the pumps and the tubing are assembled correctly. 2. Check whether Reagent Pack has been installed and initialized. 3. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge B button to see whether there is enough Calibration A.
10070001GBF5	ISE unit result error: Purge B cycle error. No flow	<ol style="list-style-type: none"> 1. Make sure that the electrodes, the pumps and the tubing are assembled correctly. 2. Check whether Reagent Pack has been installed and initialized. 3. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A and Purge B buttons to see whether there is enough Calibrator.
10070001GBM5	ISE unit result error: Purge B cycle error	Contact our customer Service Department or your local distributor.
10070001GBN5	ISE unit result error: Purge B cycle error. Reagent module is not installed	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. If not, please install it. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
10070001GBR5	ISE unit result error: Purge B cycle error. Dallas read	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
10070001GBT5	ISE unit result error: Purge B cycle error. Invalid command	Contact our customer Service Department or your local distributor.

10070001GBW5	ISE unit result error: Purge B cycle error. Dallas write	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
10070001PMA5	ISE unit result error: Pump calibration cycle error. Air in calibrant A	<ol style="list-style-type: none"> 1. Make sure that the electrodes, the pumps and the tubing are assembled correctly. 2. Check whether Reagent Pack has been installed and initialized. 3. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A button to see whether there is enough Calibration A.
10070001PMF5	ISE unit result error: Pump calibration cycle error. No flow	<ol style="list-style-type: none"> 1. Make sure that the electrodes, the pumps and the tubing are assembled correctly. 2. Check whether Reagent Pack has been installed and initialized. 3. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A and Purge B buttons to see whether there is enough Calibrator.
10070001PMM5	ISE unit result error: Pump calibration cycle error	Contact our customer Service Department or your local distributor.
10070001PMN5	ISE unit result error: Pump calibration cycle error. Reagent module is not installed	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. If not, please install it. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
10070001PMP5	ISE unit result error: Pump calibration cycle error. Pump calibration	Contact our customer Service Department or your local distributor.
10070001PMQ5	ISE unit result error: Pump calibration cycle error. Calibration value saving failed	Contact our customer Service Department or your local distributor.
10070001PMR5	ISE unit result error: Pump calibration cycle error. Dallas read	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
10070001PMT5	ISE unit result error: Pump calibration cycle error. Invalid command	Contact our customer Service Department or your local distributor.

10070001PMW5	ISE unit result error: Pump calibration cycle error. Dallas write	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
10070001SEA5	ISE unit result error: Serum cycle error. Air in calibrant A	<ol style="list-style-type: none"> 1. Make sure that the electrodes, the pumps and the tubing are assembled correctly. 2. Check whether Reagent Pack has been installed and initialized. 3. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A button to see whether there is enough Calibration A.
10070001SEF5	ISE unit result error: Serum cycle error. No flow	<ol style="list-style-type: none"> 1. Make sure that the electrodes, the pumps and the tubing are assembled correctly. 2. Check whether Reagent Pack has been installed and initialized. 3. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A and Purge B buttons to see whether there is enough Calibrator.
10070001SEM5	ISE unit result error: Serum cycle error	Contact our customer Service Department or your local distributor.
10070001SEN5	ISE unit result error: Serum cycle error. Reagent module is not installed	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. If not, please install it. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
10070001SER5	ISE unit result error: Serum cycle error. Dallas read	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
10070001SES5	ISE unit result error: Serum cycle error. Air in sample	Check whether there is enough sample in the sample container.
10070001SET5	ISE unit result error: Serum cycle error. Invalid command	Contact our customer Service Department or your local distributor.

10070001SEW5	ISE unit result error: Serum cycle error. Dallas write	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
10070001SIA5	ISE unit result error: SIP cycle error. Air in calibrant A	<ol style="list-style-type: none"> 1. Make sure that the electrodes, the pumps and the tubing are assembled correctly. 2. Check whether Reagent Pack has been installed and initialized. 3. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A button to see whether there is enough Calibration A.
10070001SIF5	ISE unit result error: SIP cycle error. No flow	<ol style="list-style-type: none"> 1. Make sure that the electrodes, the pumps and the tubing are assembled correctly. 2. Check whether Reagent Pack has been installed and initialized. 3. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A and Purge B buttons to see whether there is enough Calibrator.
10070001SIM5	ISE unit result error: SIP cycle error	<ol style="list-style-type: none"> 1. Make sure that the electrodes, the pumps and the tubing are assembled correctly. 2. Check whether Reagent Pack has been installed and initialized. 3. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A button to see whether there is enough Calibration A.
10070001SIN5	ISE unit result error: SIP cycle error. Reagent module is not installed	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. If not, please install it. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
10070001SIR5	ISE unit result error: SIP cycle error. Dallas read	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
10070001SIT5	ISE unit result error: SIP cycle error. Invalid command	Contact our customer Service Department or your local distributor.

10070001SIW5	ISE unit result error: SIP cycle error. Dallas write	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
10070001URA5	ISE unit result error: Urine cycle error. Air in calibrant A	<ol style="list-style-type: none"> 1. Make sure that the electrodes, the pumps and the tubing are assembled correctly. 2. Check whether Reagent Pack has been installed and initialized. 3. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A button to see whether there is enough Calibration A.
10070001URB5	ISE unit result error: Urine cycle error. Air in calibrant B	<ol style="list-style-type: none"> 1. Make sure that the electrodes, the pumps and the tubing are assembled correctly. 2. Check whether Reagent Pack has been installed and initialized. 3. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge B button to see whether there is enough Calibration A.
10070001URF5	ISE unit result error: Urine cycle error. No flow	<ol style="list-style-type: none"> 1. Make sure that the electrodes, the pumps and the tubing are assembled correctly. 2. Check whether Reagent Pack has been installed and initialized. 3. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A and Purge B buttons to see whether there is enough Calibrator.
10070001URM5	ISE unit result error: Urine cycle error	Contact our customer Service Department or your local distributor.
10070001URN5	ISE unit result error: Urine cycle error. Reagent module is not installed	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. If not, please install it. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
10070001URR5	ISE unit result error: Urine cycle error. Dallas read	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.

10070001URS5	ISE unit result error: Urine cycle error. Air in sample	Check whether there is enough sample in the sample container.
10070001URT5	ISE unit result error: Urine cycle error. Invalid command	Contact our customer Service Department or your local distributor.
10070001URW5	ISE unit result error: Urine cycle error. Dallas write	<ol style="list-style-type: none"> 1. Check whether Reagent Pack has been installed. 2. Check whether the wand is connected to the Reagent Pack firmly. 3. Contact our customer Service Department or your local distributor.
200700010000	ISE unit warning: Unit is busy	Contact our customer Service Department or your local distributor.
100700020085	ISE unit result error: Cl electrode voltage overflow (Cal B/Sample)	<ol style="list-style-type: none"> 1. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A button to recalibrate the ISE module. 2. Replace the electrode and test.
1007000200C5	ISE unit result error: Cl, K electrodes voltage overflow (Cal B/Sample)	<ol style="list-style-type: none"> 1. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A button to recalibrate the ISE module. 2. Replace reference electrode and recalibrate.
1007000200E5	ISE unit result error: Cl, K, Na electrodes voltage overflow (Cal B/Sample)	<ol style="list-style-type: none"> 1. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A button to recalibrate the ISE module. 2. Replace reference electrode and recalibrate.
1007000200A5	ISE unit result error: Cl, Na electrodes voltage overflow (Cal B/Sample)	<ol style="list-style-type: none"> 1. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A button to recalibrate the ISE module. 2. Replace reference electrode and recalibrate.
100700020045	ISE unit result error: K electrode voltage overflow (Cal B/Sample)	<ol style="list-style-type: none"> 1. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A button to recalibrate the ISE module. 2. Replace the electrode and test.
100700020065	ISE unit result error: K, Na electrodes voltage overflow (Cal B/Sample)	<ol style="list-style-type: none"> 1. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A button to recalibrate the ISE module. 2. Replace reference electrode and recalibrate.
100700020025	ISE unit result error: Na electrode voltage overflow (Cal B/Sample)	<ol style="list-style-type: none"> 1. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A button to recalibrate the ISE module. 2. Replace the electrode and test.

100700030085	ISE unit result error: Cl electrode voltage overflow (Cal A in calib mode, Cal B in urine mode)	<ol style="list-style-type: none"> 1. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A button to recalibrate the ISE module. 2. Replace the electrode and test.
1007000300C5	ISE unit result error: Cl, K electrodes voltage overflow (Cal A in calib mode, Cal B in urine mode)	<ol style="list-style-type: none"> 1. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A button to recalibrate the ISE module. 2. Replace reference electrode and recalibrate.
1007000300E5	ISE unit result error: Cl, K, Na electrodes voltage overflow (Cal A in calib mode, Cal B in urine mode)	<ol style="list-style-type: none"> 1. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A button to recalibrate the ISE module. 2. Replace reference electrode and recalibrate.
1007000300A5	ISE unit result error: Cl, Na electrodes voltage overflow (Cal A in calib mode, Cal B in urine mode)	<ol style="list-style-type: none"> 1. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A button to recalibrate the ISE module. 2. Replace reference electrode and recalibrate.
100700030045	ISE unit result error: K electrode voltage overflow (Cal A in calib mode, Cal B in urine mode)	<ol style="list-style-type: none"> 1. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A button to recalibrate the ISE module. 2. Replace the electrode and test.
100700030065	ISE unit result error: K, Na electrodes voltage overflow (Cal A in calib mode, Cal B in urine mode)	<ol style="list-style-type: none"> 1. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A button to recalibrate the ISE module. 2. Replace reference electrode and recalibrate.
100700030025	ISE unit result error: Na electrode voltage overflow (Cal A in calib mode, Cal B in urine mode)	<ol style="list-style-type: none"> 1. Enter the ISE screen of the Maintenance of the system software and select the Daily Maint tab. Click the Purge A button to recalibrate the ISE module. 2. Replace the electrode and test.
100700040085	ISE unit result error: Cl electrode voltage noise (Cal B/Sample)	<ol style="list-style-type: none"> 1. Replace the electrode and test. 2. Contact our customer Service Department or your local distributor.
1007000400C5	ISE unit result error: Cl, K electrodes voltage noise (Cal B/Sample)	<ol style="list-style-type: none"> 1. Replace the electrode and test. 2. Contact our customer Service Department or your local distributor.
1007000400E5	ISE unit result error: Cl, K, Na electrodes voltage noise (Cal B/Sample)	<ol style="list-style-type: none"> 1. Replace the electrode and test. 2. Contact our customer Service Department or your local distributor.

1007000400A5	ISE unit result error: Cl, Na electrodes voltage noise (Cal B/Sample)	1. Replace the electrode and test. 2. Contact our customer Service Department or your local distributor.
100700040045	ISE unit result error: K electrode voltage noise (Cal B/Sample)	1. Replace the electrode and test. 2. Contact our customer Service Department or your local distributor.
100700040065	ISE unit result error: K, Na electrodes voltage noise (Cal B/Sample)	1. Replace the electrode and test. 2. Contact our customer Service Department or your local distributor.
100700040025	ISE unit result error: Na electrode voltage noise (Cal B/Sample)	1. Replace the electrode and test. 2. Contact our customer Service Department or your local distributor.
100700050085	ISE unit result error: Cl electrode voltage noise (Cal A in calib mode, Cal B in urine mode)	1. Replace the electrode and test. 2. Contact our customer Service Department or your local distributor.
1007000500C5	ISE unit result error: Cl, K electrodes voltage noise (Cal A in calib mode, Cal B in urine mode)	1. Replace the electrode and test. 2. Contact our customer Service Department or your local distributor.
1007000500E5	ISE unit result error: Cl, K, Na electrodes voltage noise (Cal A in calib mode, Cal B in urine mode)	1. Replace the electrode and test. 2. Contact our customer Service Department or your local distributor.
1007000500A5	ISE unit result error: Cl, Na electrodes voltage noise (Cal A in calib mode, Cal B in urine mode)	1. Replace the electrode and test. 2. Contact our customer Service Department or your local distributor.
100700050045	ISE unit result error: K electrode voltage noise (Cal A in calib mode, Cal B in urine mode)	1. Replace the electrode and test. 2. Contact our customer Service Department or your local distributor.
100700050065	ISE unit result error: K, Na electrodes voltage noise (Cal A in calib mode, Cal B in urine mode)	1. Replace the electrode and test. 2. Contact our customer Service Department or your local distributor.
100700050025	ISE unit result error: Na electrode voltage noise (Cal A in calib mode, Cal B in urine mode)	1. Replace the electrode and test. 2. Contact our customer Service Department or your local distributor.

100700060085	ISE unit result error: Cl electrode slope drift	<ol style="list-style-type: none"> 1. Repeat to calibrate the ISE module for several times. 2. Replace the electrode. 3. Replace the Reagent Pack. 4. Contact our customer Service Department or your local distributor.
1007000600C5	ISE unit result error: Cl, K electrodes slope drift	<ol style="list-style-type: none"> 1. Repeat to calibrate the ISE module for several times. 2. Replace the electrode. 3. Replace the Reagent Pack. 4. Contact our customer Service Department or your local distributor.
1007000600E5	ISE unit result error: Cl, K, Na electrodes slope drift	<ol style="list-style-type: none"> 1. Repeat to calibrate the ISE module for several times. 2. Replace the electrode. 3. Replace the Reagent Pack. 4. Contact our customer Service Department or your local distributor.
1007000600A5	ISE unit result error: Cl, Na electrodes slope drift	<ol style="list-style-type: none"> 1. Repeat to calibrate the ISE module for several times. 2. Replace the electrode. 3. Replace the Reagent Pack. 4. Contact our customer Service Department or your local distributor.
100700060045	ISE unit result error: K electrode slope drift	<ol style="list-style-type: none"> 1. Repeat to calibrate the ISE module for several times. 2. Replace the electrode. 3. Replace the Reagent Pack. 4. Contact our customer Service Department or your local distributor.
100700060065	ISE unit result error: K, Na electrodes slope drift	<ol style="list-style-type: none"> 1. Repeat to calibrate the ISE module for several times. 2. Replace the electrode. 3. Replace the Reagent Pack. 4. Contact our customer Service Department or your local distributor.

100700060025	ISE unit result error: Na electrode slope drift	<ol style="list-style-type: none"> 1. Repeat to calibrate the ISE module for several times. 2. Replace the electrode. 3. Replace the Reagent Pack. 4. Contact our customer Service Department or your local distributor.
100700070085	ISE unit result error: Cl electrode out of slope range	<ol style="list-style-type: none"> 1. Remove the electrode to inspect the O-rings. 2. Replace the Reagent Pack and retest. 3. Remove electrode, tap to dislodge bubble, reinstall and recalibrate. 4. Replace reference electrode. 5. Contact our customer Service Department or your local distributor.
1007000700C5	ISE unit result error: Cl, K electrodes out of slope range	<ol style="list-style-type: none"> 1. Remove the electrode to inspect the O-rings. 2. Replace the Reagent Pack and retest. 3. Remove electrode, tap to dislodge bubble, reinstall and recalibrate. 4. Replace reference electrode. 5. Contact our customer Service Department or your local distributor.
1007000700E5	ISE unit result error: Cl, K, Na electrodes out of slope range	<ol style="list-style-type: none"> 1. Remove the electrode to inspect the O-rings. 2. Replace the Reagent Pack and retest. 3. Remove electrode, tap to dislodge bubble, reinstall and recalibrate. 4. Replace reference electrode. 5. Contact our customer Service Department or your local distributor.
1007000700A5	ISE unit result error: Cl, Na electrodes out of slope range	<ol style="list-style-type: none"> 1. Remove the electrode to inspect the O-rings. 2. Replace the Reagent Pack and retest. 3. Remove electrode, tap to dislodge bubble, reinstall and recalibrate. 4. Replace reference electrode. 5. Contact our customer Service Department or your local distributor.

100700070045	ISE unit result error: K electrode out of slope range	<ol style="list-style-type: none"> 1. Remove the electrode to inspect the O-rings. 2. Replace the Reagent Pack and retest. 3. Remove electrode, tap to dislodge bubble, reinstall and recalibrate. 4. Replace reference electrode. 5. Contact our customer Service Department or your local distributor.
100700070065	ISE unit result error: K, Na electrodes out of slope range	<ol style="list-style-type: none"> 1. Remove the electrode to inspect the O-rings. 2. Replace the Reagent Pack and retest. 3. Remove electrode, tap to dislodge bubble, reinstall and recalibrate. 4. Replace reference electrode. 5. Contact our customer Service Department or your local distributor.
100700070025	ISE unit result error: Na electrode out of slope range	<ol style="list-style-type: none"> 1. Remove the electrode to inspect the O-rings. 2. Replace the Reagent Pack and retest. 3. Remove electrode, tap to dislodge bubble, reinstall and recalibrate. 4. Replace reference electrode. 5. Contact our customer Service Department or your local distributor.
100701250005	ISE unit result error: Instruction sending failed	Contact our customer Service Department or your local distributor.
100701260005	ISE unit result error: Main unit does not receive response from ISE unit	Contact our customer Service Department or your local distributor.
100701270005	ISE unit result error: Main unit does not receive results from ISE unit	Contact our customer Service Department or your local distributor.
100640010007	Main unit result error: Command error	Contact our customer Service Department or your local distributor.
100640020007	Main unit result error: Self-check error	Contact our customer Service Department or your local distributor.
100640030007	Main unit result error: Shaking hands with other units	Contact our customer Service Department or your local distributor.
100640040007	Main unit result error: Shaking hands with other units error	Contact our customer Service Department or your local distributor.
100640050007	Main unit result error: E2PROM read error	Contact our customer Service Department or your local distributor.

100640060007	Main unit result error: E2PROM check sum error	Contact our customer Service Department or your local distributor.
100640070007	Main unit result error: E2PROM write protection	Contact our customer Service Department or your local distributor.
100640080007	Main unit result error: E2PROM write error	Contact our customer Service Department or your local distributor.
100640090007	Main unit result error: Downloading parameter	Contact our customer Service Department or your local distributor.
100640100007	Main unit result error: Parameter downloading failed	Contact our customer Service Department or your local distributor.
100640110007	Main unit result error: Resetting other units	Contact our customer Service Department or your local distributor.
100640120007	Main unit result error: Other units resetting error	Contact our customer Service Department or your local distributor.
100640130007	Main unit result error: Shutting down other units	Contact our customer Service Department or your local distributor.
100640140007	Main unit result error: Other units shutdown error	Contact our customer Service Department or your local distributor.
100640150007	Main unit result error: Invalid status. Self-check	Contact our customer Service Department or your local distributor.
100640150017	Main unit result error: Invalid status. Error	Contact our customer Service Department or your local distributor.
100640150027	Main unit result error: Invalid status. Waiting for handshake	Contact our customer Service Department or your local distributor.
100640150037	Main unit result error: Invalid status. Shutdown	Contact our customer Service Department or your local distributor.
100640160007	Main unit result error: Unit busy. No response	Contact our customer Service Department or your local distributor.
100640170007	Main unit result error: Analyzing error. Reaction disk affected	Contact our customer Service Department or your local distributor.
100640180006	Main unit result error: Analyzing error. Reaction disk not affected	Contact our customer Service Department or your local distributor.
100640190007	Main unit result error: Undefined system operation	Contact our customer Service Department or your local distributor.
100640200007	Main unit result error: Wrong system operation parameter	Contact our customer Service Department or your local distributor.
100640210007	Main unit result error: Undefined search	Contact our customer Service Department or your local distributor.
100640220007	Main unit result error: Wrong searching parameter	Contact our customer Service Department or your local distributor.
100640230007	Main unit result error: Undefined configuration	Contact our customer Service Department or your local distributor.
100640240007	Main unit result error: Wrong configuration parameter	Contact our customer Service Department or your local distributor.

100640250007	Main unit result error: Undefined process	Contact our customer Service Department or your local distributor.
100640260007	Main unit result error: Wrong process parameter	Contact our customer Service Department or your local distributor.
100640270007	Main unit result error: Restoring E2PROM	Contact our customer Service Department or your local distributor.
100640280007	Main unit result error: Updating E2PROM	Contact our customer Service Department or your local distributor.
100640290007	Main unit result error: Please re-download parameter	Contact our customer Service Department or your local distributor.
100640300007	Main unit result error: Parameter write protection	Contact our customer Service Department or your local distributor.
100640310007	Main unit result error: No result, or timeout	Contact our customer Service Department or your local distributor.
100650010005	Reaction unit result error: Command error	Contact our customer Service Department or your local distributor.
100650020005	Reaction unit result error: Self-check error	Contact our customer Service Department or your local distributor.
100650030005	Reaction unit result error: Mechanical resetting error	Reset the mechanical parts as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100650040005	Reaction unit result error: Invalid status. Self-check	Contact our customer Service Department or your local distributor.
100650040015	Reaction unit result error: Invalid status. Error	Contact our customer Service Department or your local distributor.
100650040025	Reaction unit result error: Invalid status. Waiting for handshake	Contact our customer Service Department or your local distributor.
100650040035	Reaction unit result error: Invalid status. Shutdown	Contact our customer Service Department or your local distributor.
100650040045	Reaction unit result error: Photoelectric error. Filter wheel cannot find its home position	Contact our customer Service Department or your local distributor.
00650040055	Reaction unit result error: Photoelectric error. Timeout	Contact our customer Service Department or your local distributor.
100650050005	Reaction unit result error: Unit busy. No response	Contact our customer Service Department or your local distributor.
100650060005	Reaction unit result error: Undefined speed	Contact our customer Service Department or your local distributor.
100650070005	Reaction unit result error: Wrong speed parameter	Contact our customer Service Department or your local distributor.
100650080005	Reaction unit result error: Configure undefined parameter	Contact our customer Service Department or your local distributor.
100650090005	Reaction unit result error: Wrong configuration parameter	Contact our customer Service Department or your local distributor.

100650100005	Reaction unit result error: Undefined search	Contact our customer Service Department or your local distributor.
100650110005	Reaction unit result error: Wrong searching parameter	Contact our customer Service Department or your local distributor.
100650120005	Reaction unit result error: Undefined system operation	Contact our customer Service Department or your local distributor.
100650130005	Reaction unit result error: Wrong system operation parameter	Contact our customer Service Department or your local distributor.
100650140005	Reaction unit result error: Rotation error. Cannot reach the home position	Check the reaction disk as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100650140015	Reaction unit result error: Rotation error. Cannot move away from the home position	Check the reaction disk as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100650140025	Reaction unit result error: Rotation error. Step missing	Check the reaction disk as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100650140045	Reaction unit result error: Rotation error. Mixing	Contact our customer Service Department or your local distributor.
100650140055	Reaction unit result error: Rotation error. Aspirating/dispensing sample	Contact our customer Service Department or your local distributor.
100650140065	Reaction unit result error: Rotation error. Aspirating/dispensing reagent	Contact our customer Service Department or your local distributor.
100650140075	Reaction unit result error: Rotation error. Aspirating/dispensing R2	Contact our customer Service Department or your local distributor.
100650150005	Reaction unit result error: Photoelectric error. Lamp off	Check the lamp as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100650150015	Reaction unit result error: Photoelectric error. Lamp too dark	Check the lamp status as instructed by 4.17.1 Daily Maintenance. Replace the lamp as needed. If the error remains, contact our customer Service Department or your local distributor.
100650150025	Reaction unit result error: Photoelectric error. Signal collection busy	Contact our customer Service Department or your local distributor.
100650150035	Reaction unit result error: Photoelectric error. Lamp On/Off actions are opposite	Check the lamp as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100650160005	Reaction unit result error: Undefined commission	Contact our customer Service Department or your local distributor.

100650170005	Reaction unit result error: Wrong commissioning parameter	Contact our customer Service Department or your local distributor.
100650180005	Reaction unit result error: Not commissioning	Contact our customer Service Department or your local distributor.
100650190005	Reaction unit result error: Parameter modify protection	Contact our customer Service Department or your local distributor.
100651250005	Reaction unit result error: Main unit sending error	Contact our customer Service Department or your local distributor.
100651270005	Reaction unit result error: Main unit does not receive the reaction unit result	Contact our customer Service Department or your local distributor.
100660010000	Temperature unit result error: Command error	Contact our customer Service Department or your local distributor.
100660020000	Temperature unit result error: Self-check error	Contact our customer Service Department or your local distributor.
100660030000	Temperature unit result error: Mechanical resetting error	Reset the mechanical parts as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100660040000	Temperature unit result error: Status error. Self-check	Contact our customer Service Department or your local distributor.
100660040010	Temperature unit result error: Status error. Error	Contact our customer Service Department or your local distributor.
100660040020	Temperature unit result error: Status error. Waiting for handshake	Contact our customer Service Department or your local distributor.
100660040030	Temperature unit result error: Status error. Shutdown	Contact our customer Service Department or your local distributor.
100660050000	Temperature unit result error: Unit busy. No response	Contact our customer Service Department or your local distributor.
100660060000	Temperature unit result error: Undefined search	Contact our customer Service Department or your local distributor.
100660070000	Temperature unit result error: Wrong searching parameter	Contact our customer Service Department or your local distributor.
100660080000	Temperature unit result error: Undefined temperature parameter	Contact our customer Service Department or your local distributor.
100660090000	Temperature unit result error: Wrong temperature parameter	Contact our customer Service Department or your local distributor.

100660100000	Temperature unit result error: Undefined sensor parameter	Contact our customer Service Department or your local distributor.
100660110000	Temperature unit result error: Wrong sensor parameter	Contact our customer Service Department or your local distributor.
100660120000	Temperature unit result error: Undefined target temperature	Contact our customer Service Department or your local distributor.
100660130000	Temperature unit result error: Wrong target temperature parameter	Contact our customer Service Department or your local distributor.
100660140000	Temperature unit result error: Undefined system operation	Contact our customer Service Department or your local distributor.
100660150000	Temperature unit result error: Wrong system operation parameter	Contact our customer Service Department or your local distributor.
100660160000	Temperature unit result error: Parameter write protection	Contact our customer Service Department or your local distributor.
100661250000	Temperature unit result error: Main unit sending error	Contact our customer Service Department or your local distributor.
100661270000	Temperature unit result error: Main unit does not receive the Temperature unit result	Contact our customer Service Department or your local distributor.
100670010005	Mixing unit result error: Command error	Contact our customer Service Department or your local distributor.
100670020005	Mixing unit result error: Self-check error	Contact our customer Service Department or your local distributor.
100670030005	Mixing unit result error: Mechanical resetting error	Reset the mechanical parts as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100670040005	Mixing unit result error: Status error. Self-check	Contact our customer Service Department or your local distributor.
100670040015	Mixing unit result error: Status error. Error	Contact our customer Service Department or your local distributor.
100670040025	Mixing unit result error: Status error. Waiting for handshake	Contact our customer Service Department or your local distributor.
100670040035	Mixing unit result error: Status error. Shutdown	Contact our customer Service Department or your local distributor.
100670050005	Mixing unit result error: Unit busy. No response	Contact our customer Service Department or your local distributor.
100670060005	Mixing unit result error: Undefined speed	Contact our customer Service Department or your local distributor.

100670070005	Mixing unit result error: Wrong speed parameter	Contact our customer Service Department or your local distributor.
100670080005	Mixing unit result error: Undefined configuration	Contact our customer Service Department or your local distributor.
100670090005	Mixing unit result error: Wrong configuration parameter	Contact our customer Service Department or your local distributor.
100670100005	Mixing unit result error: Undefined search	Contact our customer Service Department or your local distributor.
100670110005	Mixing unit result error: Wrong searching parameter	Contact our customer Service Department or your local distributor.
100670120005	Mixing unit result error: Undefined system operation	Contact our customer Service Department or your local distributor.
100670130005	Mixing unit result error: Wrong system operation parameter	Contact our customer Service Department or your local distributor.
100670140005	Mixing unit result error: Undefined commission	Contact our customer Service Department or your local distributor.
100670150005	Mixing unit result error: Wrong commissioning parameter	Contact our customer Service Department or your local distributor.
100670160005	Mixing unit result error: Not commissioning	Contact our customer Service Department or your local distributor.
100670170005	Mixing unit result error: Mixing bar vertical movement error. Cannot reach the home position	Check the mixing bar as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100670170015	Mixing unit result error: Mixing bar vertical movement error. Cannot move away from the home position	Check the mixing bar as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100670170025	Mixing unit result error: Mixing bar vertical movement error. Trying to move away from the home position	Check the mixing bar as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100670170035	Mixing unit result error: Mixing bar vertical movement error. Trying to move away from the washing limit position	Check the mixing bar as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100670170045	Mixing unit result error: Mixing bar vertical movement error. Trying to move away from the mixing limit position	Check the mixing bar as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100670170055	Mixing unit result error: Mixing bar vertical movement error. Collision	Turn off the analyzing unit and check if the mixing bar is blocked horizontally. If yes, remove the barrier. If the error remains, contact our customer Service Department or your local distributor.

100670170065	Mixing unit result error: Mixing bar vertical movement error. Step missing	Check the mixing bar as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100670170075	Mixing unit result error: Mixing bar vertical movement error. Wrong direction	Check the mixing bar as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100670170085	Mixing unit result error: Mixing bar vertical movement error. Horizontal position error	Check the mixing bar as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100670170095	Mixing unit result error: Mixing bar vertical movement error. Reaction disk is rotating	Check the mixing bar as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100670190015	Mixing unit result error: Mixing bar motor error. Cannot start up	Contact our customer Service Department or your local distributor.
100670190025	Mixing unit result error: Mixing bar motor error. Cannot shut down	Contact our customer Service Department or your local distributor.
100670200005	Mixing unit result error: Write protection	Contact our customer Service Department or your local distributor.
100670210005	Mixing unit result error: Mixing bar selection error	Contact our customer Service Department or your local distributor.
100670220005	Mixing unit result error: Undefined simple operation	Contact our customer Service Department or your local distributor.
100670230005	Mixing unit result error: Wrong simple operation parameter	Contact our customer Service Department or your local distributor.
100671250005	Mixing unit result error: Main unit sending error	Contact our customer Service Department or your local distributor.
100671270005	Mixing unit result error: Main unit does not receive the mixing unit result	Contact our customer Service Department or your local distributor.
100680010005	Sample unit result error: Command error	Contact our customer Service Department or your local distributor.
100680020005	Sample unit result error: Self-check error	Contact our customer Service Department or your local distributor.
100680030005	Sample unit result error: Mechanical resetting error	Reset the mechanical parts as instructed 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680040005	Sample unit result error: Status error. Self-check	Contact our customer Service Department or your local distributor.
100680040015	Sample unit result error: Status error. Error	Contact our customer Service Department or your local distributor.
100680040025	Sample unit result error: Status error. Waiting for handshake	Contact our customer Service Department or your local distributor.
100680040035	Sample unit result error: Status error. Shutdown	Contact our customer Service Department or your local distributor.

100680050005	Sample unit result error: Unit busy. No response	Contact our customer Service Department or your local distributor.
100680060005	Sample unit result error: Undefined speed	Contact our customer Service Department or your local distributor.
100680070005	Sample unit result error: Wrong speed parameter	Contact our customer Service Department or your local distributor.
100680080005	Sample unit result error: Undefined configuration	Contact our customer Service Department or your local distributor.
100680090005	Sample unit result error: Wrong configuration parameter	Contact our customer Service Department or your local distributor.
100680100005	Sample unit result error: Undefined search	Contact our customer Service Department or your local distributor.
100680110005	Sample unit result error: Wrong searching parameter	Contact our customer Service Department or your local distributor.
100680120005	Sample unit result error: Undefined system operation	Contact our customer Service Department or your local distributor.
100680130005	Sample unit result error: Wrong system operation parameter	Contact our customer Service Department or your local distributor.
100680140005	Sample unit result error: Undefined commission	Contact our customer Service Department or your local distributor.
100680150005	Sample unit result error: Wrong commissioning parameter	Contact our customer Service Department or your local distributor.
100680160005	Sample unit result error: Not commissioning	Contact our customer Service Department or your local distributor.
100680170005	Sample unit result error: Fluid controlling error	Turn off the analyzing unit. Check the syringe for leakage and check the sample probe to see if there are drops hanging on the probe tip. Then commission the fluid as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680180005	Sample unit result error: Sample disk rotation error. Cannot reach the home position	Check the sample disk as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680180015	Sample unit result error: Sample disk rotation error. Cannot move away from the home position	Check the sample disk as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680180025	Sample unit result error: Sample disk rotation error. Step missing	Check the sample disk as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680180035	Sample unit result error: Sample disk rotation error. Probe in disk	Move the sample probe outside the sample disk as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.

100680180045	Sample unit result error: Sample disk rotation error. Disabled	Check the sample disk as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680190005	Sample unit result error: Disk and probe selection error	Contact our customer Service Department or your local distributor.
100680200005	Sample unit result error: Syringe error. Full aspiration failed	Check the syringe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680200015	Sample unit result error: Syringe error. Full dispensing failed	Check the syringe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680200025	Sample unit result error: Syringe error. Cannot reach the home position	Check the syringe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680200035	Sample unit result error: Syringe error. Cannot move away from the home position	Check the syringe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680200045	Sample unit result error: Syringe error. Inadequate aspiration	Check the syringe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680200055	Sample unit result error: Syringe error. Inadequate dispensing	Check the syringe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680200065	Sample unit result error: Syringe error. Step missing	Check the syringe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680200075	Sample unit result error: Syringe error. Aspirating/dispensing not allowed now	Check the syringe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680210005	Sample unit result error: Reagent probe horizontal movement error. Cannot reach the home position	Check the sample probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680210015	Sample unit result error: Sample probe horizontal movement error. Cannot move away from the home position	Check the sample probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680210025	Sample unit result error: Sample probe horizontal movement error. Trying to move away from the sample disk limit position	Check the sample probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680210035	Sample unit result error: Sample probe horizontal movement error. Trying to move away from the reaction disk limit position	Check the sample probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.

100680210045	Sample unit result error: Sample probe horizontal movement error. Collision	Turn off the analyzing unit and check if the sample probe is blocked horizontally. If yes, remove the barrier. If the error remains, contact our customer Service Department or your local distributor.
100680210055	Sample unit result error: Sample probe horizontal movement error. Step missing	Check the sample probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680210065	Sample unit result error: Sample probe horizontal movement error. Disabled	Check the sample probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680220005	Sample unit result error: Sample probe vertical movement error. Cannot reach the home position	Check the sample probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680220015	Sample unit result error: Sample probe vertical movement error. Cannot move away from the home position	Check the sample probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680220025	Sample unit result error: Sample probe vertical movement error. Trying to move away from the initial limit position	Check the sample probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680220035	Sample unit result error: Sample probe vertical movement error. Trying to move away from the sample disk limit position	Check the sample probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680220045	Sample unit result error: Sample probe vertical movement error. Trying to move away from the washing limit position	Check the sample probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680220055	Sample unit result error: Sample probe vertical movement error. Trying to move away from the reaction disk limit position	Check the sample probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680220065	Sample unit result error: Sample probe vertical movement error. No liquid surface detected	Pause dispensing and check if there is a sample at the specified position. If no, add one. If the error remains, contact our customer Service Department or your local distributor.
100680220075	Sample unit result error: Sample probe vertical movement error. Collision	Turn off the analyzing unit and check if the sample probe is blocked horizontally. If yes, remove the barrier. If the error remains, contact our customer Service Department or your local distributor.
100680220085	Sample unit result error: Sample probe vertical movement error. Step missing	Check the sample probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.

100680220095	Sample unit result error: Sample probe vertical movement error. Sample disk or reaction disk is rotating	If this error occurs frequently, contact our customer Service Department or your local distributor.
100680220105	Sample unit result error: Sample probe vertical movement error. Disabled	Check the sample probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680220115	Sample unit result error: Sample probe vertical movement error. Keep collision	Check the sample probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100680230005	Sample unit result error: Undefined simple operation of this unit	Contact our customer Service Department or your local distributor.
100680240005	Sample unit result error: Wrong simple operation parameter	Contact our customer Service Department or your local distributor.
100680250005	Sample unit result error: Tube position error	Contact our customer Service Department or your local distributor.
100680260005	Sample unit result error: Parameter write protection of this unit	Contact our customer Service Department or your local distributor.
100681250005	Sample unit result error: Main unit sending error	Contact our customer Service Department or your local distributor.
100681270005	Sample unit result error: Main unit does not receive the sample unit result	Contact our customer Service Department or your local distributor.
100690010005	Reagent unit result error: Command error	Contact our customer Service Department or your local distributor.
100690020005	Reagent unit result error: Self-check error	Contact our customer Service Department or your local distributor.
100690030005	Reagent unit result error: Mechanical resetting error	Reset the mechanical parts as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690040005	Reagent unit result error: Status error. Self-check	Contact our customer Service Department or your local distributor.
100690040015	Reagent unit result error: Status error. Error	Contact our customer Service Department or your local distributor.
100690040025	Reagent unit result error: Status error. Waiting for handshake	Contact our customer Service Department or your local distributor.
100690040035	Reagent unit result error: Status error. Shutdown	Contact our customer Service Department or your local distributor.
100690050005	Reagent unit result error: Unit busy. No response	Contact our customer Service Department or your local distributor.
100690060005	Reagent unit result error: Undefined speed	Contact our customer Service Department or your local distributor.
100690070005	Reagent unit result error: Wrong speed parameter	Contact our customer Service Department or your local distributor.

100690080005	Reagent unit result error: Undefined parameter configuration	Contact our customer Service Department or your local distributor.
100690090005	Reagent unit result error: Wrong configuration parameter	Contact our customer Service Department or your local distributor.
100690100005	Reagent unit result error: Undefined search	Contact our customer Service Department or your local distributor.
100690110005	Reagent unit result error: Wrong searching parameter	Contact our customer Service Department or your local distributor.
100690120005	Reagent unit result error: Undefined system operation	Contact our customer Service Department or your local distributor.
100690130005	Reagent unit result error: Wrong system operation parameter	Contact our customer Service Department or your local distributor.
100690140005	Reagent unit result error: Undefined commission	Contact our customer Service Department or your local distributor.
100690150005	Reagent unit result error: Wrong commissioning parameter	Contact our customer Service Department or your local distributor.
100690160005	Reagent unit result error: Not commissioning	Contact our customer Service Department or your local distributor.
100690170005	Reagent unit result error: Fluid controlling error	Turn off the analyzing unit. Check the syringe for leakage and check the sample probe to see if there are drops hanging on the probe tip. Then commission the fluid as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690180005	Reagent unit result error: Disk rotation error. Cannot reach the home position	Check the reagent disk as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690180015	Reagent unit result error: Disk rotation error. Cannot move away from the home position	Move the reagent probe outside the reagent disk as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690180025	Reagent unit result error: Disk rotation error. Step missing	Check the reagent disk as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690180035	Reagent unit result error: Disk rotation error. Probe in disk	Move the reagent probe outside the reagent disk as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690180045	Reagent unit result error: Disk rotation error. Disabled	Check the reagent disk as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.

100690190005	Reagent unit result error: Disk and probe selection error	Contact our customer Service Department or your local distributor.
100690200005	Reagent unit result error: Syringe error. Full aspiration failed	Check the syringe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690200015	Reagent unit result error: Syringe error. Full dispensing failed	Check the syringe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690200025	Reagent unit result error: Syringe error. Cannot reach the home position	Check the syringe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690200035	Reagent unit result error: Syringe error. Cannot move away from the home position	Check the syringe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690200045	Reagent unit result error: Syringe error. Inadequate aspiration	Check the syringe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690200055	Reagent unit result error: Syringe error. Inadequate dispensing	Check the syringe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690200065	Reagent unit result error: Syringe error. Step missing	Check the syringe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690200075	Reagent unit result error: Syringe error. Aspirating/dispensing not allowed now	Check the syringe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690210005	Reagent unit result error: Reagent probe horizontal movement error. Cannot reach the home position	Check the reagent probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690210015	Reagent unit result error: Reagent probe horizontal movement error. Cannot move away from the home position	Check the reagent probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690210025	Reagent unit result error: Reagent probe horizontal movement error. Trying to move away from the reagent disk limit position	Check the reagent probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690210035	Reagent unit result error: Reagent probe horizontal movement error. Trying to move away from the reaction disk limit position	Check the reagent probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.

100690210045	Reagent unit result error: Reagent probe horizontal movement error. Collision	Turn off the analyzing unit and check if the reagent probe is blocked horizontally. If yes, remove the barrier. If the error remains, contact our customer Service Department or your local distributor.
100690210055	Reagent unit result error: Reagent probe horizontal movement error. Step missing	Check the reagent probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690210065	Reagent unit result error: Reagent probe horizontal movement error. Disabled	Check the reagent probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690220005	Reagent unit result error: Reagent probe vertical movement error. Cannot reach the home position	Check the reagent probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690220015	Reagent unit result error: Reagent probe vertical movement error. Cannot move away from the home position	Check the reagent probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690220025	Reagent unit result error: Reagent probe vertical movement error. Trying to move away from the initial limit position	Check the reagent probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690220035	Reagent unit result error: Reagent probe vertical movement error. Trying to move away from the reagent disk limit position	Check the reagent probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690220045	Reagent unit result error: Reagent probe vertical movement error. Trying to move away from the washing limit position	Check the reagent probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690220055	Reagent unit result error: Reagent probe vertical movement error. Trying to move away from the reaction disk limit position	Check the reagent probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690220065	Reagent unit result error: Reagent probe vertical movement error. No liquid surface detected	Pause dispensing and check if there is a reagent at the specified position. If no, add one. If the error remains, contact our customer Service Department or your local distributor.
100690220075	Reagent unit result error: Reagent probe vertical movement error. Collision	Turn off the analyzing unit and check if the reagent probe is blocked vertically. If yes, remove the barrier. If the error remains, contact our customer Service Department or your local distributor.
100690220085	Reagent unit result error: Reagent probe vertical movement error. Step missing	Check the reagent probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.

100690220095	Reagent unit result error: Reagent probe vertical movement error. Reagent disk or reaction disk is rotating	Contact our customer Service Department or your local distributor.
100690220105	Reagent unit result error: Reagent probe vertical movement error. Disabled	Check the reagent probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690220115	Reagent unit result error: Reagent probe vertical movement error. Keep Collision	Check the reagent probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
100690230005	Reagent unit result error: Undefined simple operation	Contact our customer Service Department or your local distributor.
100690240005	Reagent unit result error: Wrong simple operation parameter	Contact our customer Service Department or your local distributor.
100690250005	Reagent unit result error: Bottle position error	Contact our customer Service Department or your local distributor.
100690260005	Reagent unit result error: Parameter write protection	Contact our customer Service Department or your local distributor.
100691250005	Reagent unit result error: Main unit sending error	Contact our customer Service Department or your local distributor.
100691270005	Reagent unit result error: Main unit does not receive the reagent unit result	Contact our customer Service Department or your local distributor.
200650010000	Reaction unit warning: Step missing	Contact our customer Service Department or your local distributor.
200650020000	Reaction unit warning: Lamp too dark	Check the lamp status as instructed by 4.17.1 Daily Maintenance. Replace the lamp as needed. If the error remains, contact our customer Service Department or your local distributor.
200650030000	Reaction unit warning: Partial data missing	Contact our customer Service Department or your local distributor.
200650040000	Reaction unit warning: This instruction is neglected on current software version	Contact our customer Service Department or your local distributor.
200650050000	Reaction unit warning: Photoelectric warning. Filter wheel step missing	Contact our customer Service Department or your local distributor.
200660010000	Temperature unit warning: Reaction temperature abnormal	Contact our customer Service Department or your local distributor.
200660020000	Temperature unit warning: Reagent pre-heating temperature abnormal	Contact our customer Service Department or your local distributor.

200660030000	Temperature unit warning: Reagent refrigeration temperature abnormal	Contact our customer Service Department or your local distributor.
200670010002	Mixing unit warning: Invalid mixing	Check the mixing bar as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
200670020002	Mixing unit warning: Invalid washing	Check the mixing bar as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
200670030000	Mixing unit warning: Mixing cancelled	Check the mixing bar as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
200670040000	Mixing unit warning: Washing cancelled	Check the mixing bar as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
200670050000	Mixing unit warning: Mixing bar exceeds the home position horizontally	Check the mixing bar as instructed by . If the error remains, contact our customer Service Department or your local distributor.
200670060000	Mixing unit warning: Mixing bar exceeds the limit position horizontally	Check the mixing bar as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
200670070000	Mixing unit warning: Mixing bar exceeds the home position vertically	Check the mixing bar as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
200670080000	Mixing unit warning: Mixing bar exceeds the limit position vertically	Check the mixing bar as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
200680010000	Sample unit warning: Sample probe exceeds the home position horizontally	Check the sample disk as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
200680020000	Sample unit warning: Sample probe exceeds the limit position horizontally	Check the sample disk as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
200680030000	Sample unit warning: Sample probe exceeds the home position vertically	Check the sample disk as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
200680040000	Sample unit warning: Sample probe exceeds the limit position vertically	Check the sample disk as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
200680050000	Sample unit warning: Sample syringe full	Check the syringe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
200680060000	Sample unit warning: Sample syringe empty	Check the syringe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.

200680070003	Sample unit warning: No liquid surface detected when sample probe aspirating. ... exhausted	Pause dispensing and check if there is enough sample (calibrator or control) at the specified position. If no, add more. If the error remains, contact our customer Service Department or your local distributor.
200680080003	Sample unit warning: Liquid surface below probe tip when sample probe aspirating. ... exhausted	Pause dispensing and check if there is enough sample (calibrator or control) at the specified position. If no, add more. If the error remains, contact our customer Service Department or your local distributor.
200680090002	Sample unit warning: No liquid surface detected when sample probe dispensing	Pause dispensing and check if there is a sample at the specified position. If no, add one. If the error remains, contact our customer Service Department or your local distributor.
200680100002	Sample unit warning: Inadequate dispensing of sample probe	Check the syringe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
200680110006	Sample unit warning: No liquid surface detected when washing sample probe	Turn off the analyzing unit. Check the syringe for leakage and check the sample probe to see if there are drops hanging on the probe tip. Then commission the fluid as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
200690010000	Reagent unit warning: Reagent probe exceeds the home position horizontally	Check the reagent probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
200690020000	Reagent unit warning: Reagent probe exceeds the limit position horizontally	Check the reagent probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
200690030000	Reagent unit warning: Reagent probe exceeds the home position vertically	Check the reagent probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
200690040000	Reagent unit warning: Reagent probe exceeds the limit position vertically	Check the reagent probe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
200690050000	Reagent unit warning: Syringe full	Check the syringe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
200690060000	Reagent unit warning: Syringe empty	Check the syringe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
200690070003	Reagent unit warning: No liquid surface detected when reagent probe aspirating. ... exhausted	Pause dispensing and check if there is a reagent (distilled water or wash solution) at the specified position. If no, add one. If the error remains, contact our customer Service Department or your local distributor.

200690080003	Reagent unit warning: Liquid surface below probe tip when reagent probe aspirating. ... exhausted	Pause dispensing and check if there is enough reagent (distilled water or wash solution) at the specified position. If no, add more. If the error remains, contact our customer Service Department or your local distributor.
200690090002	Reagent unit warning: No liquid surface detected when reagent probe dispensing (%,%)	Pause dispensing and check if there is a reagent at the specified position. If no, add one. If the error remains, contact our customer Service Department or your local distributor.
200690100002	Reagent unit warning: Inadequate dispensing of reagent probe	Check the syringe as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
200690110006	Reagent unit warning: No liquid surface detected when washing reagent probe	Pause dispensing and check if there is a reagent at the specified position. If no, add one. If the error remains, contact our customer Service Department or your local distributor.
300640010007	Main unit response error: Parity error	Contact our customer Service Department or your local distributor.
300640020007	Main unit response error: Instruction too long	Contact our customer Service Department or your local distributor.
300640030007	Main unit response error: Instruction too short	Contact our customer Service Department or your local distributor.
300640040007	Main unit response error: Incomplete instruction	Contact our customer Service Department or your local distributor.
300640050007	Main unit response error: Check sum error	Contact our customer Service Department or your local distributor.
300640060007	Main unit response error: A value within 00-0x7F is larger than 0x7F	Contact our customer Service Department or your local distributor.
300640070007	Main unit response error: Unmatched machine type	Contact our customer Service Department or your local distributor.
300641260007	Main unit response error: No response, or timeout	Contact our customer Service Department or your local distributor.
300651260005	Reaction unit response error: No response, or timeout	Contact our customer Service Department or your local distributor.
300651260005	Reaction unit response error: No response, or timeout	Contact our customer Service Department or your local distributor.
300651260015	Reaction unit response error: Parity error	Contact our customer Service Department or your local distributor.
300651260025	Reaction unit response error: Instruction too long	Contact our customer Service Department or your local distributor.
300651260035	Reagent unit response error: Instruction too short	Contact our customer Service Department or your local distributor.
300651260045	Reaction unit response error: Incomplete instruction	Contact our customer Service Department or your local distributor.
300651260055	Reaction unit response error: Check sum error	Contact our customer Service Department or your local distributor.

300651260065	Reaction unit response error: A value within 00-0x7F is larger than 0x7F	Contact our customer Service Department or your local distributor.
300651260075	Reaction unit response error: Unmatched machine type	Contact our customer Service Department or your local distributor.
300651261265	Reaction unit response error: No response, or timeout	Contact our customer Service Department or your local distributor.
300660030000	Temperature unit response error: No response, or timeout	Contact our customer Service Department or your local distributor.
300660030010	Temperature unit response error: Parity error	Contact our customer Service Department or your local distributor.
300660030020	Temperature unit response error: Instruction too long	Contact our customer Service Department or your local distributor.
300660030030	Temperature unit response error: Instruction too short	Contact our customer Service Department or your local distributor.
300660030040	Temperature unit response error: Incomplete instruction	Contact our customer Service Department or your local distributor.
300660030050	Temperature unit response error: Check sum error	Contact our customer Service Department or your local distributor.
300660030060	Temperature unit response error: A value within 00-0x7F is larger than 0x7F	Contact our customer Service Department or your local distributor.
300660030070	Temperature unit response error: Unmatched machine type	Contact our customer Service Department or your local distributor.
300660031260	Temperature unit response error: No response, or timeout	Contact our customer Service Department or your local distributor.
300671260005	Mixing unit response error: No response, or timeout	Contact our customer Service Department or your local distributor.
300671260015	Mixing unit response error: Parity error	Contact our customer Service Department or your local distributor.
300671260025	Mixing unit response error: Instruction too long	Contact our customer Service Department or your local distributor.
300671260035	Mixing unit response error: Instruction too short	Contact our customer Service Department or your local distributor.
300671260045	Mixing unit response error: Incomplete instruction	Contact our customer Service Department or your local distributor.
300671260055	Mixing unit response error: Check sum error	Contact our customer Service Department or your local distributor.

300671260065	Mixing unit response error: A value within 00-0x7F is larger than 0x7F	Contact our customer Service Department or your local distributor.
300671260075	Mixing unit response error: Unmatched machine type	Contact our customer Service Department or your local distributor.
300671261265	Mixing unit response error: No response, or timeout	Contact our customer Service Department or your local distributor.
300681260005	Sample unit response error: No response, or timeout	Contact our customer Service Department or your local distributor.
300681260015	Sample unit response error: Parity error	Contact our customer Service Department or your local distributor.
300681260025	Sample unit response error: Instruction too long	Contact our customer Service Department or your local distributor.
300681260035	Sample unit response error: Instruction too short	Contact our customer Service Department or your local distributor.
300681260045	Sample unit response error: Incomplete instruction	Contact our customer Service Department or your local distributor.
300681260055	Sample unit response error: Check sum error	Contact our customer Service Department or your local distributor.
300681260065	Sample unit response error: A value within 00-0x7F is larger than 0x7F	Contact our customer Service Department or your local distributor.
300681260075	Sample unit response error: Unmatched machine type	Contact our customer Service Department or your local distributor.
300681261265	Sample unit response error: No response, or timeout	Contact our customer Service Department or your local distributor.
300691260005	Reagent unit response error: No response, or timeout	Contact our customer Service Department or your local distributor.
300691260015	Reagent unit response error: Parity error	Contact our customer Service Department or your local distributor.
300691260025	Reagent unit response error: Instruction too long	Contact our customer Service Department or your local distributor.
300691260045	Reagent unit response error: Incomplete instruction	Contact our customer Service Department or your local distributor.
300691260055	Reagent unit response error: Check sum error	Contact our customer Service Department or your local distributor.
300691260065	Reagent unit response error: A value within 00-0x7F is larger than 0x7F	Contact our customer Service Department or your local distributor.
300691260075	Reagent unit response error: Unmatched machine type	Contact our customer Service Department or your local distributor.

300691261265	Reagent unit response error: No response, or timeout	Contact our customer Service Department or your local distributor.
400000010009	System environment error: Operating system error	Contact our customer Service Department or your local distributor.
400000020009	System environment error: System language library does not exist	Contact our customer Service Department or your local distributor.
400000030009	System environment error: Text resource library does not exist	Contact our customer Service Department or your local distributor.
400000040009	System environment error: Resolution error	Reset the resolution (1024x768) of the display. If the error remains, contact our customer Service Department or your local distributor.
400000050000	System environment error: Wrong color	Reset the color (at least 8 bits) of the display. If the error remains, contact our customer Service Department or your local distributor.
400000060000	System environment error: Screen saver shutdown error	Close the screen saver. If the error remains, contact our customer Service Department or your local distributor.
400000070000	System environment error: Sleeping shutdown error	Shutdown the sleeping function. If the error remains, contact our customer Service Department or your local distributor.
400000080009	Operating software error: Memory error	Contact our customer Service Department or your local distributor.
400000110007	Operating software error: No empty command buffer	Contact our customer Service Department or your local distributor.
400000120009	Operating software error: Void cursor	Contact our customer Service Department or your local distributor.
400000130008	Operating software error: Data processing thread error	Contact our customer Service Department or your local distributor.
400000140008	Operating software error: Test thread error	Contact our customer Service Department or your local distributor.
400000150009	Operating software error: Multi-media timer error	Contact our customer Service Department or your local distributor.
400000160000	System environment error: Mouse error	If this error occurs once more, exit the operating software, then connect the mouse again and re-start the operation unit.
400000180009	Operating software error: Database does not exist	Contact our customer Service Department or your local distributor.
400000190009	Operating software error: Database initialization error	Contact our customer Service Department or your local distributor.
400000200009	Operating software error: Database version error	Contact our customer Service Department or your local distributor.

400000210009	Operating software error: Database error	Contact our customer Service Department or your local distributor.
400000220009	Operating software error: Database connection error	Contact our customer Service Department or your local distributor.
400000230009	Operating software error: Database is read only!	Contact our customer Service Department or your local distributor.
400000250000	Operating software error: Database searching error	Contact our customer Service Department or your local distributor.
400000260008	Operating software error: Database updating error(%d)	Contact our customer Service Department or your local distributor.
400000270000	Operating software error: Database connection missing	Contact our customer Service Department or your local distributor.
400000280000	Operating software error: Database backing up error	Contact our customer Service Department or your local distributor.
400000290000	Operating software error: Database importing error	Contact our customer Service Department or your local distributor.
400000300000	Operating software error: Database exporting error	Contact our customer Service Department or your local distributor.
400000310008	Operating software error: Serial port startup error	<p>Check if the analyzing unit is connected to the operation unit properly, otherwise place the MAIN POWER to OFF and shut down the operation unit, then reconnect and restart them.</p> <p>After restarting the analyzing unit and operation unit, if the error remains, download parameters again to initialize the serial port as instructed by 4.17.5 Alignment.</p> <p>If the error remains, contact our customer Service Department or your local distributor.</p>
400000320008	Operating software error: Serial port initialization error	<p>Check if the analyzing unit is connected to the operation unit properly, otherwise place the MAIN POWER to OFF and shut down the operation unit, then reconnect and restart them.</p> <p>After restarting the analyzing unit and operation unit, if the error remains, download parameters again to initialize the serial port as instructed by 4.17.5 Alignment.</p> <p>If the error remains, contact our customer Service Department or your local distributor.</p>

400000330008	Operating software error: Serial port sending thread error	<p>Check if the analyzing unit is connected to the operation unit properly, otherwise place the MAIN POWER to OFF and shut down the operation unit, then reconnect and restart them.</p> <p>After restarting the analyzing unit and operation unit, if the error remains, download parameters again to initialize the serial port as instructed by 4.17.5 Alignment.</p> <p>If the error remains, contact our customer Service Department or your local distributor.</p>
400000340008	Operating software error: Serial port receiving thread error	<p>Check if the analyzing unit is connected to the operation unit properly, otherwise place the MAIN POWER to OFF and shut down the operation unit, then reconnect and restart them.</p> <p>After restarting the analyzing unit and operation unit, if the error remains, download parameters again to initialize the serial port as instructed by 4.17.5 Alignment.</p> <p>If the error remains, contact our customer Service Department or your local distributor.</p>
400000350008	Operating software error: Serial port sending error	<p>Check if the analyzing unit is connected to the operation unit properly, otherwise place the MAIN POWER to OFF and shut down the operation unit, then reconnect and restart them.</p> <p>After restarting the analyzing unit and operation unit, if the error remains, download parameters again to initialize the serial port as instructed by 4.17.5 Alignment.</p> <p>If the error remains, contact our customer Service Department or your local distributor.</p>
400000360008	Operating software error: Serial port receiving error	<p>Check if the analyzing unit is connected to the operation unit properly, otherwise place the MAIN POWER to OFF and shut down the operation unit, then reconnect and restart them.</p> <p>After restarting the analyzing unit and operation unit, if the error remains, download parameters again to initialize the serial port as instructed by 4.17.5 Alignment.</p> <p>If the error remains, contact our customer Service Department or your local distributor.</p>
400000370009	Operating software error: Configuration file does not exist	Contact our customer Service Department or your local distributor.
400000380009	Operating software error: Configuration file error	Contact our customer Service Department or your local distributor.

400000390009	Operating software error: Configuration file read error	Contact our customer Service Department or your local distributor.
400000400000	Operating software error: Configuration file write error	Contact our customer Service Department or your local distributor.
400000410000	Operating software error: Help file does not exist	Contact our customer Service Department or your local distributor.
400000420000	Operating software error: Help file opening error	Contact our customer Service Department or your local distributor.
400000430000	Operating software error: Log read error	Contact our customer Service Department or your local distributor.
400000440000	Operating software error: Log write error	Contact our customer Service Department or your local distributor.
400000450000	Operating software error: Log error	Contact our customer Service Department or your local distributor.
400000460008	Operating software error: Cannot connect to the analyzing unit	<p>Check if the analyzing unit is connected to the operation unit properly, otherwise place the MAIN POWER to OFF and shut down the operation unit, then reconnect and restart them.</p> <p>After restarting the analyzing unit and operation unit, if the error remains, download parameters again to initialize the serial port as instructed by 4.17.5 Alignment.</p> <p>If the error remains, contact our customer Service Department or your local distributor.</p>
400000470008	Operating software error: Handshake failed	<p>Check if the analyzing unit is connected to the operation unit properly, otherwise place the MAIN POWER to OFF and shut down the operation unit, then reconnect and restart them.</p> <p>After restarting the analyzing unit and operation unit, if the error remains, download parameters again to initialize the serial port as instructed by 4.17.5 Alignment.</p> <p>If the error remains, contact our customer Service Department or your local distributor.</p>
400000480008	Operating software error: Version No. checking error	Contact our customer Service Department or your local distributor.
400000490000	Operating software error: Response does not corresponds to the command	Contact our customer Service Department or your local distributor.
400000500000	Operating software error: Received frame does not corresponds to the command	Contact our customer Service Department or your local distributor.

400000510009	System environment error: Self-check error	<p>Check if the analyzing unit is connected to the operation unit properly, otherwise place the MAIN POWER to OFF and shut down the operation unit, then reconnect and restart them.</p> <p>After restarting the analyzing unit and operation unit, if the error remains, perform self-checking again as instructed by 4.17.5 Alignment.</p> <p>If the error remains, contact our customer Service Department or your local distributor.</p>
400000520008	Operating software error: Parameter downloading error	<p>Check if the analyzing unit is connected to the operation unit properly, otherwise place the MAIN POWER to OFF and shut down the operation unit, then reconnect and restart them.</p> <p>After restarting the analyzing unit and operation unit, if the error remains, download parameters again as instructed by 4.17.5 Alignment.</p> <p>If the error remains, contact our customer Service Department or your local distributor.</p>
400000530008	Operating software error: Mechanical resetting error	Reset the mechanical parts as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
400000540008	Operating software error: Cuvette segment replacing error	Check the reaction disk as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
400000550008	Operating software error: Background measurement error	Contact our customer Service Department or your local distributor.
400000560008	Operating software error: Cuvette blank measurement error	Contact our customer Service Department or your local distributor.
400000570008	Operating software error: Washing error	Contact our customer Service Department or your local distributor.
400000580008	Operating software error: Startup check is not finished normally	<p>Check if the analyzing unit is connected to the operation unit properly, otherwise place the MAIN POWER to OFF and shut down the operation unit, then reconnect and restart them.</p> <p>After restarting the analyzing unit and operation unit, if the error remains, start the startup check again as instructed by 4.17.1 Daily Maintenance.</p> <p>If the error remains, contact our customer Service Department or your local distributor.</p>

400000590000	Operating software error: Lamp intensity on the low side	Check the lamp as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
400000600008	Operating software error: Lamp intensity too low. Can't test	Check the lamp as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
400000610008	Operating software error: Dark current checking failed	Contact our customer Service Department or your local distributor.
400000620008	Operating software error: Dark current too large	Contact our customer Service Department or your local distributor.
400000630008	Operating software error: Both AD values are too similar	Contact our customer Service Department or your local distributor.
400000640008	Operating software error: Off AD is larger than the On AD	Contact our customer Service Department or your local distributor.
400000650008	Operating software error: Lamp turning on failed	Check the lamp as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
400000660008	Operating software error: Lamp turning off failed	Check the lamp as instructed by 4.17.5 Alignment. If the error remains, contact our customer Service Department or your local distributor.
400000670008	Operating software error: Ambient temperature too high	Check if the ambient temperature is within acceptable range. If the error remains, contact our customer Service Department or your local distributor.
400000680008	Operating software error: Ambient temperature too low	Check if the ambient temperature is within acceptable range. If the error remains, contact our customer Service Department or your local distributor.
400000690008	Operating software error: Reaction temperature too high	Contact our customer Service Department or your local distributor.
400000700008	Operating software error: Reaction temperature too low	Contact our customer Service Department or your local distributor.
400000710000	Operating software error: Temperature fluctuation	Contact our customer Service Department or your local distributor.
400000720000	Operating software error: Sending buffer overflows	Contact our customer Service Department or your local distributor.
400000730000	Operating software error: Receiving buffer overflows	Contact our customer Service Department or your local distributor.
400000810001	Test result error: No balance point found in ...	Check the test parameters and rerun the test. If this error occurs frequently, contact our customer Service Department or your local distributor.

400000820001	Test result error: No linear range found in ...	Check the test parameters and rerun the test. If this error occurs frequently, contact our customer Service Department or your local distributor.
400000830001	Test result error: Linearity of reaction curve of ... too weak	Check the test parameters and rerun the test. If this error occurs frequently, contact our customer Service Department or your local distributor.
400000840001	Test result error: Response of ... calculation error	Check the test parameters and rerun the test. If this error occurs frequently, contact our customer Service Department or your local distributor.
400000850001	Test result error: Response of ... exceeds the one of weakest calibrator	Check the calibrator and calibration rule and rerun the test. If this error occurs frequently, contact our customer Service Department or your local distributor.
400000860001	Test result error: Response of ... exceeds the one of strongest calibrator	Check the calibrator and calibration rule and rerun the test. If this error occurs frequently, contact our customer Service Department or your local distributor.
400000870001	Test result error: Concentration of ... exceeds the low limit of linear range	Check the test parameters and rerun the test. If this error occurs frequently, contact our customer Service Department or your local distributor.
400000880001	Test result error: Concentration of ... exceeds the high limit of linear range	Check the test parameters and rerun the test. If this error occurs frequently, contact our customer Service Department or your local distributor.
400000910001	Test result error: Absorbance of ... too low	Rerun the test. If this error occurs frequently, contact our customer Service Department or your local distributor.
400000920001	Test result error: Reagent blank of ... too high	Rerun the test. If this error occurs frequently, contact our customer Service Department or your local distributor.
400000930001	Test result error: R2 blank of ... too low	Rerun the reagent blank. If this error occurs frequently, contact our customer Service Department or your local distributor.
400000940001	Test result error: R2 blank of ... too high	Rerun the reagent blank. If this error occurs frequently, contact our customer Service Department or your local distributor.
400000950001	Test result error: Sample blank of ... too low	Rerun the reagent blank of this test. If this error occurs frequently, contact our customer Service Department or your local distributor.
400000960001	Test result error: R2 blank of ... too high	Rerun the reagent blank of this test. If this error occurs frequently, contact our customer Service Department or your local distributor.
400000970001	Test result error: Sample blank of ... too low	Rerun the test. If this error occurs frequently, contact our customer Service Department or your local distributor.
400000980001	Test result error: Sample blank of ... too high	Rerun the test. If this error occurs frequently, contact our customer Service Department or your local distributor.

400000990001	Test result error: Substrate of ... exhausted	Check the test parameters and rerun the test. If this error occurs frequently, contact our customer Service Department or your local distributor.
400001000001	Test result error: Abnormal prozone check of ...	Rerun the test. If this error occurs frequently, contact our customer Service Department or your local distributor.
400001010001	Test result error: Calibration parameter of ... calculation failed	Check the calibrator and calibration rule and rerun the calibration. If this error occurs frequently, contact our customer Service Department or your local distributor.
400001020001	Test result error: Calibration SD of ... too large	Check the calibrator and calibration rule and rerun the calibration. If this error occurs frequently, contact our customer Service Department or your local distributor.
400001030001	Test result error: Difference between calibration coefficients of ... too large	Check the calibrator and calibration rule and rerun the calibration. If this error occurs frequently, contact our customer Service Department or your local distributor.
400001040001	Test result error: Calibration related coefficients of ... too low	Check the calibrator and calibration rule and rerun the calibration. If this error occurs frequently, contact our customer Service Department or your local distributor.
400001050001	Test result error: Incomplete repeated calibration data of ...	Check the calibrator and calibration rule and rerun the calibration. If this error occurs frequently, contact our customer Service Department or your local distributor.
400001060001	Test result error: Calibration curve of ... not monotonic	Check the calibrator and calibration rule and rerun the calibration. If this error occurs frequently, contact our customer Service Department or your local distributor.
400001070001	Test result error: Concentration of ... calculation failed	Check the test parameters and rerun the test. If this error occurs frequently, contact our customer Service Department or your local distributor.
400001080001	Test result error: Incomplete test result of ...	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001090001	Test result error: Error of repeated ... too large	Check the calibrator and calibration rule and rerun the calibration. If this error occurs frequently, contact our customer Service Department or your local distributor.
400001100000	Test result error: QC out of control	If this error occurs frequently, contact our customer Service Department or your local distributor.

400001110001	Test result error: ... dispensing delayed	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001120001	Test result error: R2 of ... delayed	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001130001	Test result error: Photoelectric collection of ... delayed	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001140006	Operating software error: Wash solution exhausted, or invalid sensor	Check the deionized water tank. If the water is not enough, add more. If the error remains, contact our customer Service Department or your local distributor.
400001150006	Operating software error: Waste full	Check and clear the waste tank. If the error remains, contact our customer Service Department or your local distributor.
400001230001	Test result error: Incomplete repeated QC data of ...	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001350000	Test result error: Blank response of ... too low	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001360000	Test result error: Blank response of ... too high	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001370000	Test result error: Calibration sensitivity of ... too low	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001410005	LIS communication error: LIS host can not be connected	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001420005	LIS communication error: Incorrect segment sequence. Required segment lost	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001430005	LIS communication error: Required field lost	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001440005	LIS communication error: Data type error	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001450005	LIS communication error: Field value is not found	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001460005	LIS communication error: Wrong message type	If this error occurs frequently, contact our customer Service Department or your local distributor.

400001470005	LIS communication error: Wrong event No.	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001480005	LIS communication error: Wrong process ID	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001490005	LIS communication error: Wrong version No.	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001500005	LIS communication error: Unknown keyword identity	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001510005	LIS communication error: Keyword identity already exists	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001520005	LIS communication error: Unknown error	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001530005	LIS communication error: Your query does not exist on LIS	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001540005	LIS communication error: LIS host is busy. Cannot respond	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001550005	LIS communication error: LIS response is timed out	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001560000	LIS communication error: Wrong assay No. (%s, %d)	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001670008	Operating software error: Reagent module reading failed	Check the reagent module. If the error occurs frequently, contact our customer Service Department or your local distributor.
400001680008	Operating software error: Reagent module is expired	Replace the reagent module.
400001700000	LIS Communication Error: Sending buffer is full	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001710000	LIS communication error: Application record locked	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001720000	LIS communication error: Application error	If this error occurs frequently, contact our customer Service Department or your local distributor.

400001730001	Test result error: %s exceeds measurement range	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001740008	Operating software error: ISE reagent depleted	Replace.
400001750008	Operating software error: ISE instruction execute error	If this error occurs frequently, contact our customer Service Department or your local distributor.
400001760008	Operating software error: ISE module error	If this error occurs frequently, contact our customer Service Department or your local distributor.
500000170000	System environment error: Printer connection error	Check the connection between the operation unit and the printer and ensure the printer is on. If the error remains, contact our customer Service Department or your local distributor.
500001160000	Operating software error: ... is out of date. Please replace in time	Replace.
500001170000	Operating software error: ... is out of date. Please replace in time	Replace.
500001180000	Operating software error: Calibration interval of ... is out. Please re-calibrate in time	Rerun the calibration.
500001620000	Operating software error: %s is out of date. Please replace	Replace.
500001630000	Operating software error: Lot No. of %s is changed. Please calibrate again	Recalibrate.
500001640000	Operating software error: %s exceeds rated work hours. Please replace	Replace.
500001650000	Operating software error: %s exceeds rated test times. Please replace	Replace.
500001660000	Operating software error: %s has no installation information. Please update	Update.

7 *Calculation Methods*

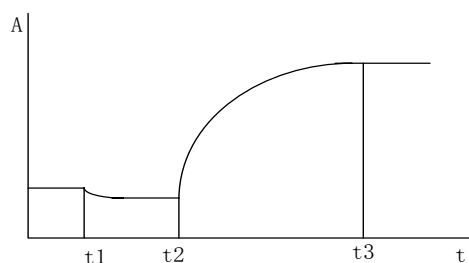
7.1 Reaction Types

The system provides three reaction types for measurement.

7.1.1 Endpoint

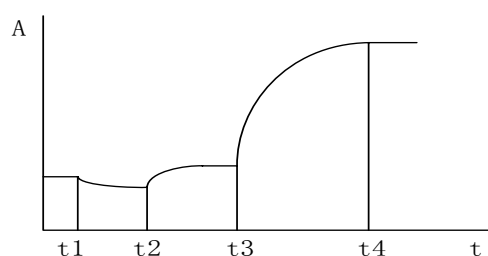
The endpoint or, more correctly, equilibrium method, is most ideal. The reaction reaches equilibrium after a period of time. Since the equilibrium constant is very large, it can be considered that all substrates (analytes) have changed into products, and absorbance of the reaction liquid does not change any more. The absorbance change is directly proportional to the analytes concentration.

Figure 7-1 Single-reagent Endpoint Reaction Curve



As shown in Figure 7-1, t_1 is the time when the reagent is added, and t_2 is the time when the sample is added. The reaction starts when they are mixed. At t_3 the reaction reaches equilibrium and the absorbance reading is taken. The reaction period is t_2 to t_3 .

Figure 7-2 Double-reagent Endpoint Reaction Curve



As shown in Figure 7-2, t_1 is the time when the first reagent is added, and t_2 is the time when the sample is added, incubation starts when they are mixed. t_3 is the time when the second reagent is added, then the reaction starts when they are mixed. At t_4 the reaction reaches equilibrium and the absorbance reading is taken. t_2 to t_3 is the incubation period and t_3 to t_4 is the reaction period.

The endpoint reaction is largely insensitive to minor changes in such condition changes as amount of enzyme, pH and temperature, provided the changes are not significant enough to affect the reaction time.

7.1.2 Fixed-Time

For the fixed-time reaction method (namely, first-order kinetic method or initial rate method), the reaction velocity (v), within a specific period, is directly proportional to the substrate concentration $[S]$, namely, $v=k[S]$. As the substrate is consumed continuously, the reaction velocity becomes smaller and smaller, and so does the change rate of the absorbance. It takes much time for such a reaction to reach equilibrium. Theoretically, the absorbance reading can be taken at any time. The reaction can, however, become steady only after a delay because it is complicated at the beginning and there are miscellaneous reactions due to the complex serum compositions. For any first order reaction, the substrate concentration $[S]$ at a given time after the start of the reaction is given by the following:

$$[S] = [S_0] \times e^{-kt}$$

Where,

$[S_0]$ - initial substrate concentration,

e - base of the natural log,

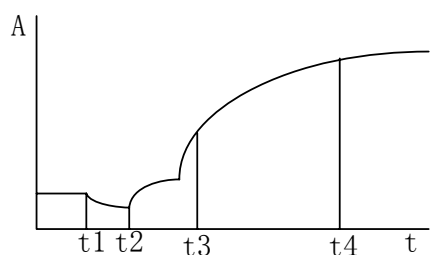
k - rate constant.

The change in substrate concentration $\Delta[S]$ over a fixed-time interval, t_1 to t_2 , is related to $[S_0]$ by the following equation:

$$[S_0] = \frac{-\Delta[S]}{e^{-kt_1} - e^{-kt_2}}$$

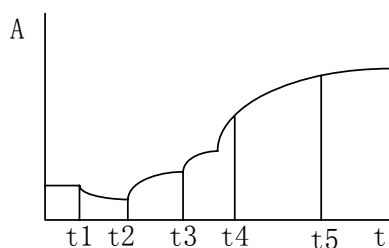
That is, within a fixed time interval, the change in substrate concentration is directly proportional to its initial concentration. This is the general property of first order reactions. Within this interval, absorbance change is directly proportional to the analytes concentration.

Figure 7-3 Single-reagent Fixed-time Reaction Curve



As shown in Figure 7-3, t_1 is the time when the reagent is added and t_2 is the time when the sample is added. The reaction starts when they are mixed. From t_3 the reaction becomes steady and t_4 is the time to stop monitoring the reaction. t_2 to t_3 is the lag period, and the absorbance readings are respectively taken at t_3 and t_4 .

Figure 7-4 Double-reagent Fixed-time Reaction Curve



As shown in Figure 7-4, t_1 is the time when the first reagent is added, and t_2 is the time when the sample is added, and then the mixture absorbance reading is taken after they are mixed. t_3 is the time when the second reagent is added, then the reaction starts when they are mixed. At t_4 the reaction reaches equilibrium, and t_5 is the time to stop monitoring the reaction. t_2 to t_3 is the incubation period, and t_3 to t_4 is the delay period. The absorbance readings are respectively taken at t_4 and t_5 .

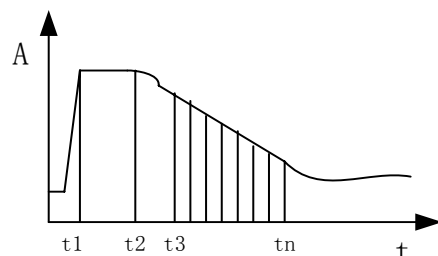
The fixed-time reaction is demanding more technically than the equilibrium method. Because reaction rate is measured at two different points, all the factors that affect reaction rate, such as pH, temperature, and amount of enzyme, must be kept constant from one assay to the next, as must the timing of the two measurements. A reference solution of the substrate must be used for calibration.

7.1.3 Kinetic

For the kinetic method (namely, zero-order kinetic or continuous-monitoring method), the reaction velocity is not related to the substrate concentration and remains constant in the reaction process. As a result, for a given wavelength, the absorbance of the analytes changes evenly, and the change rate ($\Delta A/\text{min}$) is directly proportional to the activity or concentration of the substrate. The kinetic method is usually used to measure enzyme activity.

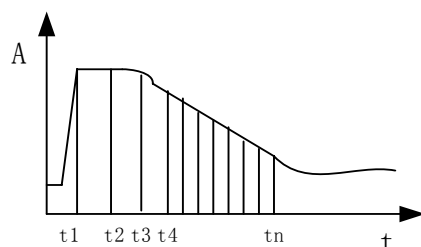
In fact, it is impossible for the substrate concentration to be high enough, and the reaction will be no longer a zero-order reaction when the substrate is consumed to a certain degree. Therefore, the theory only stands within certain period. In addition, the reaction can become steady only after a certain period of time, because the reaction is complicated at the beginning and there are miscellaneous reactions due to the complex serum compositions.

Figure 7-5 Single-reagent Kinetic Reaction Curve



As shown in Figure 7-5, t_1 is the time when the reagent is added, t_2 is the time when the sample is added and the reaction starts when they are mixed. From t_3 the reaction becomes steady. t_n is the time to stop monitoring the reaction. t_2 to t_3 is the delay period, and t_3 to t_n is the monitoring period, during which the absorbance readings are taken.

Figure 7-6 Double-reagent Kinetic Reaction Curve

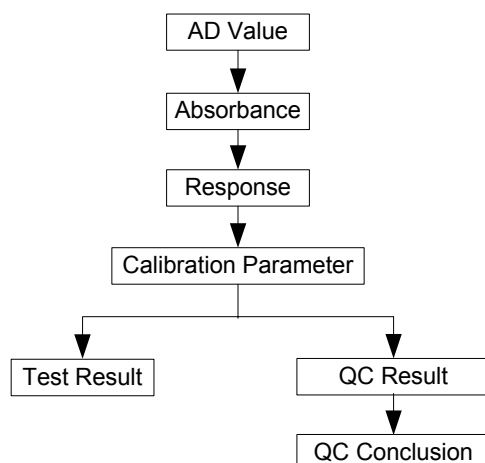


As shown in Figure 7-6, t_1 is the time when the first reagent is added, and t_2 is the time when the sample is added, and then they are mixed. t_3 is the time when the second reagent is added, then the reaction starts when they are mixed. At t_4 the reaction reaches equilibrium, and t_n is the time to stop monitoring the reaction. t_3 to t_4 is the delay period, and t_4 to t_n is the monitoring period, during which the absorbance readings are taken.

7.2 Calculation Process

The system adopts such a measurement and calculation flow as shown in Figure 7-7.

Figure 7-7 Calculation Process



7.2.1 Calculating Absorbance

The system measures the light intensity through photoelectric conversion, linear amplification and AD conversion. For the light intensity signal I_i of Channel i, the AD output D_i is:

$$D_i = K_{pe} \cdot K_a \cdot K_{ad} \cdot I_i$$

Where,

K_{pe} - photoelectric conversion factor

K_a - linear amplification factor

K_{ad} - AD conversion factor

D_i - test data of Channel i

I_i - light intensity of Channel i

So,

$$A_i = \lg \frac{I_{i0}}{I_i} = \lg \frac{D_{i0}}{D_i}$$

Where,

A_i - absorbance of Channel i,

D_{i0} - background AD output,

D_i - AD output after the substrate is added.

In theory, when the lights are off, the AD output of each channel will be zero. In practice, because of the existence of dark current, there is still a background output

$D_{background}$, which should be deducted. Then, the complete absorbance formula should be:

$$A_i = \lg \frac{D_{i0} - D_{background}}{D_i - D_{background}}$$

7.2.2 Calculating Response

For the system, the response (R) is defined as the absorbance change before and after the reaction, or the absorbance change rate during the reaction process.

The formula for calculating the response (R) is closely related to the analytical method (kinetic, fixed-time and endpoint), the number of reagents (single or double), and the number of wavelengths (single or double). They are respectively detailed in the following sections.

7.2.2.1 Calculating Response with Endpoint Method

Single-reagent and single-wavelength

$$R = R_s - R_{SB}$$

$$R_s \text{ and } R_{SB} \text{ are calculated through } R = A_{t_3} - A_{t_2-1} \times \frac{V}{V+S}.$$

Where,

R_s - original response

R_{SB} response of sample blank. If no sample blank is required, $R_{SB} = 0$.

A_{t_3} - absorbance at t_3

A_{t_2-1} - absorbance at previous point of t_2

$\frac{V}{V+S}$ - single-reagent volume calibration factor

Double-reagent and single-wavelength

$$R = R_s - R_b$$

$$R_s \text{ and } R_b \text{ are calculated through } R = A_{t_4} - A_{t_3-n} \times \frac{V_1 + S}{V_1 + S + V_2}.$$

Where,

R_s - original response

R_b - double-reagent blank response. R_b is the response of the latest reagent blank.

A_{t_4} - absorbance at t_4

A_{t_3-n} - absorbance at $t_3 - n$, $-n$ is the starting value of the reaction time

$\frac{V_1 + S}{V_1 + S + V_2}$ - double-reagent volume calibration factor

Double-wavelength (for both single-reagent and double-reagent)

The calculation method is similar to that for single-wavelength reaction, except that in every measurement period the absorbance is the difference between primary wavelength absorbance and secondary wavelength absorbance.

7.2.2.2 Calculating Response of Fixed-time Reaction

Single-wavelength (for both single-reagent and double-reagent)

$$R = R_s - R_b$$

R_s and R_b are calculated through $R = \frac{A_{t_m} - A_{t_k}}{t_m - t_k}$.

Where,

R_s - original response

R_b - reagent blank response. R_b will be the response of the latest reagent blank. If no reagent blank has been required, $R_b = 0$

t_l - start time for absorbance reading

t_m - end time for absorbance reading

Double-wavelength (for both single-reagent and double-reagent)

The calculation method is similar to that for single-wavelength reaction, except for every measurement period, the absorbance is the difference between primary wavelength absorbance and secondary wavelength absorbance.

7.2.2.3 Calculating Response of Kinetic Reaction

Single-wavelength (for both single-reagent and double-reagent)

$$R = R_s - R_b$$

R_s and R_b are calculated through the method of least squares.

Where,

R_s - original response

R_b - reagent blank response. R_b will be the response of the latest reagent blank.

If no reagent blank has been required, $R_b = 0$

Formula with the method of least squares:

$$R = \frac{\sum_{i=I}^M (T_i - \bar{T}) \cdot (A_i - \bar{A})}{\sum_{i=I}^M (T_i - \bar{T})^2}$$

Where, I - high limit of linear range, M - low limit of linear range, A_i - absorbance at i, \bar{A} - average absorbance between I and M, T_i - time at I, \bar{T} - average time between I and M

Double-wavelength (for both single-reagent and double-reagent)

The calculation method is similar to that for single-wavelength reaction, except for every measurement period, the absorbance is the difference between primary wavelength absorbance and secondary wavelength absorbance.

7.2.3 Calculating Calibration Parameters

The system provides two calibration methods: linear calibration and nonlinear calibration. Linear calibration includes one-point linear calibration, two-point linear calibration and multi-point linear calibration. They are mainly used for tests determined by colorimetry. Nonlinear calibration includes Logit-Log 4P, Logit-Log 5P, Exponential 5P, Polynomial 5P, Parabola and Spline. They are mainly used for tests determined by turbidity.

In this section,

- R - calibrator response
- C - calibrator concentration (activity)
- K, R_0, a, b, c - calibration parameters

7.2.3.1 Calculating Linear Calibration Parameters

One-point linear calibration

Calibration formula: $R = aC$

This calibration method adopts only one calibration parameter a , $a = \frac{R}{C}$.

This calibration method requires only one calibrator.

Two-point linear calibration

Calibration formula: $R = aC + b$.

This calibration method adopts two calibration parameters: a and b , where,

$$a = \frac{R_2 - R_1}{C_2 - C_1}, \quad b = R_1 - \left(\frac{R_2 - R_1}{C_2 - C_1} \right) C_1.$$

This calibration method requires two calibrators. C_1 and C_2 are respectively the concentrations of calibrator 1 and calibrator 2. R_1 and R_2 are respectively the responses of calibrator 1 and calibrator 2.

Multi-point linear calibration

Calibration formula: $R = aC + b$.

This calibration method adopts two calibration parameters: a and b .

This calibration method requires n ($n \geq 3$) calibrators. C_i is the concentration of calibrator i . R_i is the response of calibrator i . a and b can be obtained through the method of least squares.

$$a = \frac{\sum_{i=1}^n C_i R_i - \left(\sum_{i=1}^n C_i \right) \left(\sum_{i=1}^n R_i \right) / n}{\sum_{i=1}^n C_i^2 - \left(\sum_{i=1}^n C_i \right)^2 / n}$$
$$b = \left(\sum_{i=1}^n R_i \right) / n - \left[\frac{\sum_{i=1}^n C_i R_i - \left(\sum_{i=1}^n C_i \right) \left(\sum_{i=1}^n R_i \right) / n}{\sum_{i=1}^n C_i^2 - \left(\sum_{i=1}^n C_i \right)^2 / n} \right] \left(\sum_{i=1}^n C_i \right) / n$$

7.2.3.2 Calculating Nonlinear Calibration Parameters

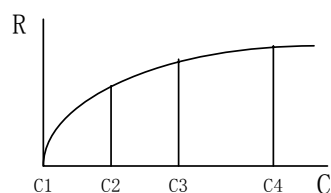
Logistic-Log 4P

$$\text{Calibration formula: } R = R_0 + K \frac{1}{1 + \exp[-(a + b \ln C)]}$$

This calibration method adopts four parameters: R_0 , K , a and b .

This calibration method requires at least four calibrators. The concentration (or activity) of calibrator 1 is 0, and the corresponding R is equal to R_0 . This calibration method is applied to the calibration curve that the response becomes smaller and smaller with the concentration increase. See Figure 7-8.

Figure 7-8 Logit-Log 4P calibration curve



Logistic-Log 5P

Calibration formula:
$$R = R_0 + K \frac{1}{1 + \exp[-(a + b \ln C + cC)]}$$

This calibration method adopts five parameters: R_0 , K , a , b and c .

This calibration method requires at least five calibrators. The concentration (or activity) of calibrator 1 is 0, and the corresponding R is equal to R_0 . The applications of the calibration method are the same with that of Logit-Log 4P, but this method has a higher fitting.

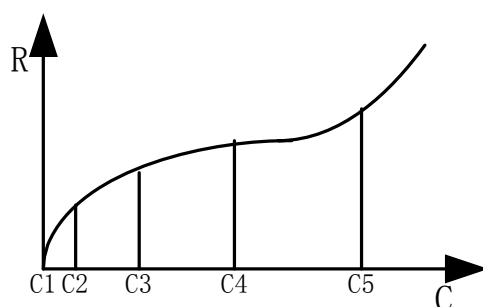
Exponential 5P

Calibration formula:
$$R = R_0 + K \exp[a \ln C + b(\ln C)^2 + c(\ln C)^3]$$

This calibration method adopts five parameters: R_0 , K , a , b and c .

This calibration method requires at least five calibrators. The concentration (or activity) of calibrator 1 is 0, and the corresponding R is equal to R_0 . This calibration method is applied to the calibration curve that the response increases sharply when the concentration reaches a specific value. See Figure 7-9.

Figure 7-9 Exponential 5p calibration curve



Polynomial 5P

Calibration formula:
$$\ln C = a + b\left(\frac{R - R_0}{100}\right) + c\left(\frac{R - R_0}{100}\right)^2 + d\left(\frac{R - R_0}{100}\right)^3$$

This calibration method adopts five parameters: R_0 , a , b , c and d .

This calibration method requires at least five calibrators. The concentration (or activity) of calibrator 1 is 0, and the corresponding R is equal to R_0 .

Parabola

Calibration formula: $R = aC^2 + bC + c$

This calibration method adopts three parameters: a , b and c .

This calibration method requires at least three calibrators. The calibration parameters can be calculated through the method of polynomial least squares.

Spline

Calibration formula: $R = R_{0i} + a_i(C - C_i) + b_i(C - C_i)^2 + c_i(C - C_i)^3$

This calibration method requires 2 to 6 calibrators. The number of calibrators is set to be n , so the calibration method has $4(n-1)$ parameters in total: R_{0i} , a_i , b_i and c_i .

7.2.4 Calculating Concentration

7.2.4.1 Calculating Concentration of Linearly Calibrated Sample/control

One-point linear calibration

$$C = \frac{R}{a}$$

Where,

a - calibration parameter

Two-point linear calibration

$$C = \frac{R - b}{a}$$

Where,

a , b - calibration parameters

Multi-point linear calibration

$$C = \frac{R - b}{a}$$

Where,

a , b - calibration parameters

7.2.4.2 Calculating Concentration of Nonlinearly Calibrated Sample/control

Logistic-Log 4P

$$C = EXP\left(\frac{-a - \ln\left(\frac{K}{R - R_0} - 1\right)}{b}\right)$$

Where,

R_0 , K , a , b - calibration parameters

Logistic-Log 5P

The positive real root is obtained with the dichotomy method.

Exponential5P

The positive real root is obtained with the dichotomy method.

Polynomial5P

$$C = \exp\left(a + b\left(\frac{R - R_0}{100}\right) + c\left(\frac{R - R_0}{100}\right)^2 + d\left(\frac{R - R_0}{100}\right)^3\right)$$

Where,

R_0 , a , b , c , d - calibration parameters

Parabola

The positive real root of the following linear quadratic equation is obtained:
 $aC^2 + bC + c - R = 0$

Spline

Spline defines several calculation sections based on the responses of calibration concentrations. Each section differs in specific parameters. Therefore, the section to which the current response belongs should be confirmed before Spline calculation. The parameters of relevant section shall be used to obtain a positive real root with the dichotomy method.

7.2.5 QC Rule

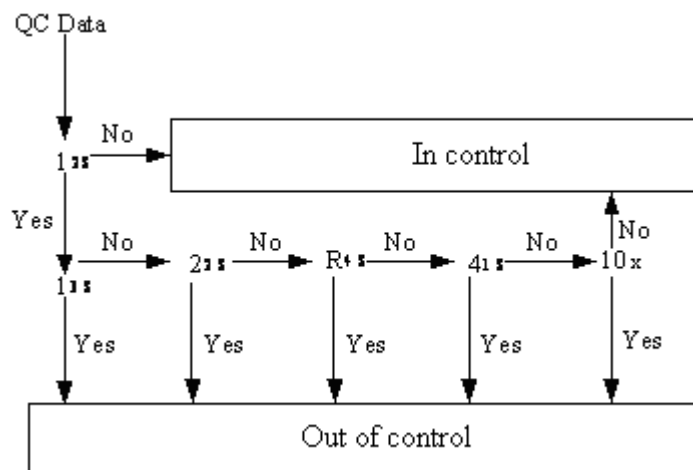
7.3 Westgard Multi-rule

Westgard multi-rule is shown below.

Symbol	Explanation	QC Conclusion
1_{2s}	One control value exceeds ± 2 standard deviations.	Warning
1_{3s}	One control value exceeds ± 3 standard deviations.	Out-of-control (random error, systematic error)
2_{2s}	Two consecutive control values for one level exceed ± 2 standard deviations.	Out-of-control (systematic error)
R_{4s}	The difference between two consecutive control values exceeds 4 standard deviations.	Out-of-control (random error)
4_{1s}	Four consecutive control values for one level exceed ± 1 standard deviation.	Out-of-control (systematic error)
10_x	Ten consecutive control values for one level lie on one side of the mean.	Out-of-control (systematic error)

Westgard multi-rule QC conclusion flow for single control is shown in Figure 7-10.

Figure 7-10 Westgard Multi-rule QC Conclusion Flow



For several controls, the conclusion logic is similar to the above condition, except for multiple continuous QC data, which should be combined simultaneously.

7.3.1.1 Cumulative Sum Check

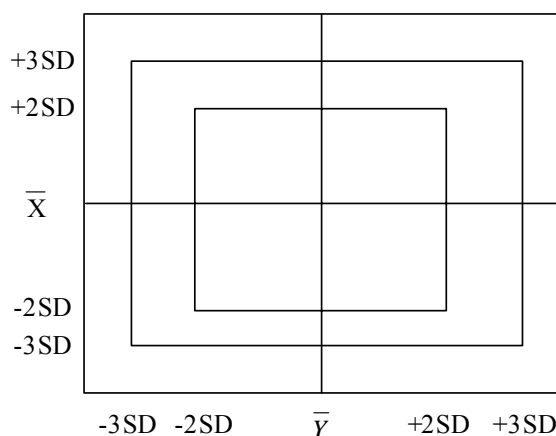
Regarding different requirements to the QC result, cumulative sum check usually adopts three controlling methods, which are mainly used to monitor the systematic error of the testing methods. Where, \bar{x} - average value, SD - standard deviation.

Controlling Methods	Threshold (k)	Limit(h)
CS-(1.0SD: 2.7SD)	$\bar{x} \pm 1.0SD$	$\pm 2.7SD$
CS-(1.0SD: 3.0SD)	$\bar{x} \pm 1.0SD$	$\pm 3.0SD$
CS-(0.5SD: 5.1SD)	$\bar{x} \pm 0.5SD$	$\pm 5.1SD$

7.3.1.2 Twin-plot

In the system, Twin-plot, which has no detailed rules, is present only as a whole chart to help you make a QC conclusion.

Figure 7-11 Twin-plot



The chart can sensitively indicate the systematic errors and random errors.

7.4 Calculation Method of ISE Unit (optional)

An ion selective electrode develops a voltage that varies with the concentration of the ion to which it responds. The relationship between the voltage developed and the concentration of the sensed ion is logarithmic, as expressed by the Nernst equation:

$$E_x = E_s + \frac{RT}{nF} \log (\mu C)$$

Where,

E_x - the potential of the electrode in sample solution

E_s - the potential developed under standard conditions

RT/nF - a temperature dependent “constant”, termed the slope(s)

Log - base ten logarithm function

μ - activity coefficient of the measured ion in the solution

C - concentration of the measured ion in the solution

The calculation process of the concentration of the ion in the sample is as the following steps.

- The module measures the potential of the calibrant A and calibrant B and calculates the slope S of the electrode with the formula below.

$$S = \frac{E_A - E_B}{\log \frac{C_A}{C_B}}$$

where,

S – the slope of the electrode

E_A – the potential of calibrant A

E_B – the potential of calibrant B

C_A – the concentration of calibrant A

C_B – the concentration of calibrant B

- The module calculates the concentration of the ion in the sample with the formula below.

$$C_X = C_A \times 10^{\frac{E_X - E_A}{S}}$$

Where,

C_X – the concentration of the ion in the sample

E_X – the potential of the sample

C_A – the concentration of calibrant A

E_A – the potential of calibrant A

S – the slope of the electrode

Appendix A System Specifications

A.1 Technical Specifications

- Throughput: Maximum of 100 tests/hour
- Number of simultaneous measurements: 13 double-reagent tests or 26 single-reagent tests
- Analytical methods: Endpoint, Fixed-time and Kinetic. All of the three methods support double reagent and double wavelength
- Sample/reagent disk: 8 sample tube positions and 28 reagent bottle positions; a refrigerator is provided to keep the temperature at 4-15 centigrade
- Sample volume: 3 μ l-45 μ l with increment of 0.5 μ l.
- Reagent volume: 30 μ l-450 μ l with increment of 1 μ l.
- STAT samples: Emergent samples can be analyzed at any time with highest priority.
- Probe: Capable of detecting liquid level and obstructions, and tracking liquid level
- Washing system: The probe and mixing bar can be washed automatically.
- Auto dilute and rerun
- Mixing bar: For single-reagent tests, it functions immediately after sample dispensing; for double-reagent tests, it functions immediately after dispensing of the second reagent
- Reaction disk: 40 reaction cuvettes
- Reaction temperature: 37°C
- Reaction cuvettes: 5mm \times 6mm \times 30mm; 5mm optical path; disposable; 900 μ l
- Reaction volume: 180-500 μ l
- Photometric system: Interference filters of 8 wavelengths; forward optics
- Light source: Tungsten-halogen lamp; 12V, 20VA
- Wavelength: 340nm, 405nm, 450nm, 510nm, 546nm, 578nm, 630nm and 670nm
- Measuring period: 36 seconds
- Interval between two absorbance readings: 18 seconds
- Water consumption: \leq 2.5L/h
- Maximum reaction time: 10 minutes
- Noise: \leq 75dB
- Fuse: 250VAC T1.6A
250VAC T2A
250VAC T6.3A
250VAC T10A

A.2 Power Requirements

- Power supply: 100-130V/200-240V~, 50/60Hz, three-wire power cord and properly grounded.
- Power consumption: 350VA

A.3 EMC

The equipment complies with the emission and immunity requirement description in this part of the IEC 61326-1:2005/EN 61326-1:2006 and IEC 61326-2-6:2005/EN 61326-2-6:2006.

A.4 Environmental Requirements

Work:

- Temperature: 15°C - 30°C
- Humidity: 35%RH-85%RH, without condensation
- Atmospheric pressure: 80.0kPa – 106.0kPa
- Above-sea-level height: -1,300feet - 6,500 feet
-400m - 2,000m

Storage:

- Temperature: 0°C - 40°C for main unit, 5°C - 25°C for ISE unit
- Humidity: 30%RH-85%RH, without condensation
- Atmospheric pressure: 50.0kPa – 106.0kPa
- Above-sea-level height: -1,300feet – 18,000 feet
-400m – 5,500m

A.5 Dimension and Weight

- Dimension: 690mm ×570mm ×595mm(W×D×H)
- Weight: ≤75 Kg

A.6 Input/Output Devices

- PC keyboard
- Hand-held bar code reader(optional)
- PC mouse
- Printer
- Display

A.7 Communication Interface

- Interface between Analyzing Unit and Operation Unit: RS-232

Appendix B Supplies

To ensure personal safety and system performance, use supplies manufactured or recommended by our company only. Contact our customer Service Department or your local distributor for details.

Description	P/N	Location	Comments
Light source assembly	BA10-30-77781	Lamp housing	Replacing part Replace it when 1) It serves for over 1000h; or 2) The system prompts.
Plunger assembly of syringe	BA30-20-06651	Syringe	Replacing part Replace it when 1) It serves for 3 months; 2) It runs for 100,000 times; or 3) It is seriously damaged.
Syringe gasket	0040-10-32303	Connection part between the syringe and the Tee	Replacing part Replace it when the syringe is disassembled for 2 - 3 times.
Probe assembly	BA31-30-56790	Probe arm	Replacing part Replace it when 1) It serves for 1 year; or 2) It is damaged or bent.
Probe gasket	0040-10-32307	Probe	Replacing part Replace it when 1) The probe is disassembled for 2 - 3 times; or 2) The probe is replaced with a new one.
Filter assembly	BA31-30-41412	Deionized water tank	Replacing part Replace it every 6 months

Description		P/N	Location	Comments
Mixing bar		BA31-20-41651	Mixing bar arm	Replacing part Replace it when it is damaged.
Reaction cuvette		BA10-20-77751	Reaction Disk	Consumable
20ml reagent bottle		BA31-20-41376	Reagent disk	Consumable
40ml reagent bottle		BA31-20-41377	Reagent disk	Consumable
Cap of reagent bottle		BA31-20-41536	Reagent disk	Consumable
A4 copy paper		0150-10-00381	Printer	Consumable
K+ electrode (optional)		BA34-10-63641	ISE unit (optional)	Consumable
Na+ electrode (optional)		BA34-10-63642	ISE unit (optional)	Consumable
Cl- electrode (optional)		BA34-10-63639	ISE unit (optional)	Consumable
Li+ electrode (optional)		BA34-10-63644	ISE unit (optional)	Consumable
Reference electrode (optional)		BA34-10-63640	ISE unit (optional)	Consumable
Spacer electrode (optional)		BA34-10-63643	ISE unit (optional)	Consumable
Cleaning Solution Kit (optional)		BA34-10-63645	ISE unit (optional)	Consumable
Reagent (optional)	Module	BA34-10-63673	ISE unit (optional)	Consumable
Urine (optional)	Dilution	BA34-10-63671	ISE unit (optional)	Consumable
ISE control		BA34-10-63669	ISE unit (optional)	Consumable

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